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## ROENTGEN TREATMENT OF UTERINE FIBROMYOMAS *


FRANCIS CARTER WOOD, M.D.
NEW YORK


There is still room for study and discussion concerning the best mode of treatment of fibromyomas of the uterus, and a final adjustment of the conflicting views will probably never be arrived at, simply because there are types of growths which should necessarily be operated on and types which can be better treated by radium or x-rays. In borderline situations in which a complete anatomic diagnosis is impossible before treatment is begun, there will always be a divergence of views on proper therapy. Such divergence of opinion is at present great. It ranges from the view expressed by a gynecologist that the treatment of fibromyomas by x-rays is "particularly objectionable as it is not only useless, but exercises a harmful effect on the general endocrine activity and metabolism," this surgeon recommending panhysterectomy in all cases but confessing to a mortality of about 5 per cent, to the extreme of certain German gynecologists who irradiate a large proportion of myomas which come under their observation.[1]

In the general hospitals in this country the vast proportion of myomas are still removed surgically. At St. Luke's Hospital, New York, for example, in the last seven years 1,443 myomas were operated on. During the same time only twenty patients were referred from the surgical service to the radiotherapeutic department for treatment; yet in some gynecologic services in this country nearly half the myomas are irradiated.

In deciding on the type which may properly be operated on or irradiated, any one will grant that large and hard, necrotic or calcified fibromyomas should be treated by surgical operation; also all those complicated by cystic disease of the ovary of any type, or acute or chronic inflammatory processes in the adnexa with fever. Pregnancy cannot always be excluded, as the examination of operating room material amply demonstrates, but radiation will destroy the fetus. In the simpler cases in which the ovaries are healthy, the surgeon generally is inclined to leave these organs so as to prevent the rapid onset of the menopause. Others feel that such ovaries are a liability rather than an asset, in that they cease to function in a year or two, and hence believe in removing them. There is some difference of opinion as to the treatment of pedunculated submucous or subserous myomas. They are difficult to cure by irradiation and the general view is that they are best treated by surgery.

The question whether a supravaginal hysterectomy is best is also under discussion. If the cervix is left there is always a chance of carcinoma occurring later, and this has been shown to be not unimportant, as it has been found that carcinomas may occur in patients having had supravaginal hysterectomy. In those fibromyomas in which a sarcomatous development has taken place, the general opinion in this country is that an operation should be done, in place of irradiation. In Germany, irradiation is extensively used. But these sarcomas are almost never diagnosed clinically, and as their occurrence is probably below the 1 per cent incidence usually given in the literature on the subject, they will continue to be treated either by surgery or by irradiation as chance circumstances dictate. There is a question whether these sarcomas are always highly malignant and whether a certain number of them may not escape diagnosis and the patient never come for treatment, so that, if the frequency of the occurrence of fibroids throughout the general population is considered, the real proportion of those who develop sarcomas must be extremely small.[2] The records of the St. Luke's Hospital laboratory, for example, show that 2,438 fibromyomatous uteri have been microscopically examined. In this group there are only nineteen sarcomas, either of the muscle variety or of the spindle cell connective tissue type, definitely shown to arise in fibromyomas. The corpus carcinomas which not infrequently complicate fibromyomas are rarely diagnosed clinically; hence they too will be treated incorrectly at times, for the radiation dose for fibromyomas is far below that necessary to cure carcinomas of the uterine body. Careful clinical study of the patient will usually reveal the lesion, for the menorrhagia or metrorrhagia, though reduced in quantity, will continue despite the irradiating. Hence any patient in whom the condition does not yield promptly should have a diagnostic curettage. The frequency of occurrence in the St. Luke's Hospital material is about 0.5 per cent. Thus the total mortality from malignant growths if unrecognized and irradiated would still be less than that due to surgery.

The statement is not infrequently made by surgeons that fibromyomas of the uterus are often accompanied by other pathologic changes in the adnexa, but my laboratory records do not confirm this statement. For example, among the last 150 fibromyomas removed at St. Luke's Hospital, evidence of a chronic process was found in only forty-one, and no example of an acute suppurative lesion was seen. Such chronic processes of

* Read before the Section on Radiology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

1. Two good recent discussions of the subject are those by Keene and Block: Am. J. Obst. & Gynec. **17**: 848 (June) 1929, and by Laws, ibid., p. 855.

2. A good survey and bibliography are given by Corscaden and Stout: Am. J. Roentgenol. **21**: 155-167 (Feb.) 1929.

low degree, often found only microscopically, are frequently accompanied by small cysts of the ovaries, but such lesions do not regularly give symptoms that justify a laparotomy.

The present low mortality of hysterectomy is often stressed by the surgeon, but in the last 1,000 myomas removed at St. Luke's Hospital I find a mortality of 1.5 per cent. This probably represents a minimum rate. The records of these patients make it perfectly evident that a certain number of these operations could have been avoided if a little more care had been taken in studying the patient's condition.

With radiation treatment there should be no complications and no mortality directly due to their irradiation, but an occasional case is reported after treatment with radium in which there is stenosis of the os with resulting pyometra, obstruction of the ureters, or perforation of the intestine. The latter occurrence is usually due to the fact that the intestine is adherent to the uterus, and therefore the particular attached loop is exposed to considerable radiation. If there were no such adhesions, the peristaltic motion of the intestine would prevent any one portion receiving a dose that would cause an ulcer. I have seen the autopsy material from one patient who had a perforation of the intestine, in which a loop was found adherent to the posterior surface of the uterus just where it received the maximum irradiation dosage. In my own experience, in which about 300 uterine fibromyomas were treated with x-rays, no deaths have occurred.

A certain advantage in the use of radium is that in young women, if not more than 1,000 or 1,500 mg. hours is given, menstruation may return and the patients may later become pregnant. The question as to whether such irradiation influences subsequent offspring in an unfavorable way is not yet settled. Certain experimental studies point to the possibility, but there is a considerable body of human material being collected which points to the fact that the ova are not necessarily permanently injured.[3]

In balancing the results of the two types of treatment, it is apparent that the advantages of surgery are its certainty in removing the fibroid; the possibility of avoiding sterilization in young women by myomectomy or partial hysterectomy; the relatively low mortality of the operation and the possibility of handling other pathologic conditions at the same time and of removing the appendix as a proctective measure. Against surgery may be placed the mortality, even though low; the fact that the patient is unfit for work for at least a month; the necessary expense incident to such treatment and the disadvantages of an abdominal scar, with the occasional keloidal hypertrophy or ventral hernia. The last two complications do not occur often but still must be considered in evaluating the treatment.

On the side of irradiation, radium being considered first, the advantages are that most fibroids will shrink down considerably or even entirely disappear with a single treatment of about 1,500 mg. hours. Menstruation may reappear after a short period of amenorrhea, in which case the patient may later become pregnant. The disadvantages of radium are that it necessitates hospitalization, for its insertion is a minor surgical procedure since the cervix may have to be dilated; the mucous membrane in contact with the radium is apt to become atrophic later or an actual constriction of the cervix with pyometra may follow, while the postirradiation sickness may be just as serious as that following surgical removal. The expense of radium also is considerable.

The advantages of roentgent treatment are that the patient is ambulant; the treatments are infrequent, being one or two weeks apart; they are short, not over twenty minutes each; the patient as a rule does not suffer from any unpleasant postirradiation symptoms; the radiation action is chiefly on the ovaries, and there is no caustic effect observable on the endometrium, as examination of irradiated uteri has shown. The cost can be made minimal, so that such treatment fits a large proportion of the working population in that they do not lose their positions or their salaries during the treatment. From the economic side, therefore, there is great advantage in irradiation with x-rays. The chief disadvantage of both radium and x-rays is that they produce more or less permanent amenorrhea as a necessary part of the treatment, for the chief effect in causing shrinkage of the fibroid is the absence of periodic hormonal disturbances due to the ovarian activity. No doubt there is some local effect that acts by inhibiting the growth of some of the fibromuscular tissues and diminishing the caliber of the blood vessels, but the change in the ovary is unquestionably the most important. This is evident from the rarity with which fibroids are seen in autopsies after the menopause has occurred.

*Distribution of Patients Given Irradiation According to Age Groups*

| Age Group | Number |
|---|---|
| From 25 to 30 | 13 |
| From 30 to 35 | 10 |
| From 35 to 40 | 23 |
| From 40 to 45 | 63 |
| From 45 to 50 | 59 |
| From 50 and over | 32 |
| Total | 200 |

It is wholly unnecessary to discuss the fact that irradiation reduces or completely relieves the symptoms due to fibromyomas. There is ample evidence already published to prove this. The intent of this paper is rather to call attention to the fact that a large number of patients are still being operated on who could obtain relief from their symptoms by a method which is less dangerous to life, simpler of application and, in properly selected patients, just as effective as surgical removal, with a mortality practically nil. The survey of my own records merely strengthens this attitude.

Exclusive of those patients irradiated within a year, there are 200 concerning whom the records are sufficiently full to offer data of interest. Most of these women were private patients, so that they were more fluent in their complaints and also in their thanks. The distribution in age groups is given in the accompanying table.

As is well known, the patients between 25 and 40 as a rule require slightly heavier dosage or, what is preferable, more prolonged treatment than those from 40 on. The reduction of a fibroid in a young woman by roentgen irradiation without the production of permanent amenorrhea is a difficult matter, and myomectomy is preferable in such instances. When the myomectomy does not check the bleeding, and of course in the persistent menorrhagia of the young in which the alternative is a hysterectomy, the use of radiation is perfectly proper. Many of those above the age of 50 needed

3. A review of the subject with bibliography is given by Goldstein, L.: Am. J. Obst. & Gynec. **16**: 747 (July) 1928.

only three or four treatments for the establishing of a clinical cure. A satisfactory reduction of fibroids after the menopause has been accomplished in three cases, but in one irradiation was a complete failure. In my own experience there has been no advantage in the use of high voltage roentgen rays. With the short wavelengths emitted at 200 kilovolts with a filtration of 0.5 mm. of copper, there is great lateral scattering, and severe general reactions and anemia may be produced by full doses. The amount of this scattering can be judged by the fact that it is quite possible to observe the bones of the hand with a fluoroscope 8 or 10 feet away from the patient. This means that the bones of the pelvis and spine are subjected to a heavy radiation, and considerable destruction of the marrow may take place. It is far preferable to give doses that are approximately 60 to 70 per cent of a skin erythema dose with a voltage not exceeding 160 kilovolts and a filter of 0.25 mm. of copper or 0.5 mm. of zinc. Under these circumstances the treatment is short, not to exceed twenty minutes at a skin focus distance of 40 cm.

The patient should receive such a dose not oftener than once in ten days, unless bleeding or other symptoms are severe. The first treatment should be given just after the period, if possible. As a routine a portal of about 200 square centimeters is used, the exposure being made suprapubically one time and sacrally the next. There is then no danger of a cross-over erythema, and, unless the patient is highly nervous, no general reaction. Eight such treatments will produce a complete amenorrhea in the average patient. Younger ones may require from ten to twelve exposures; older patients, from four to six. With modern feminine costumes, the radiation can be given without the patients having to undress. This is a great saving of the patient's and the operator's time and is not an unimportant factor in the handling of difficult and nervous women. Obviously after the second or third dose the skin over the abdomen and back is examined to see that there is no reddening; otherwise it is entirely unnecessary to strip such patients.

Under these circumstances the patient is rarely detained more than twenty or twenty-five minutes, an important factor in irradiating those whose business or household duties make it imperative that as little time as possible be lost. With such irradiation a shopgirl can return to her store or a housewife go home and continue her duties without annoying after-effects.

In the evidently neurotic patient it is important to begin with a small dose to gain the patient's confidence and not drive her away by any severe after-reaction in case she may be highly sensitive to radiation. Such patients should also be told that menstruation subsequent to the first treatments may be accentuated.

Before this procedure was adopted, there were not a few notations in my histories that after the first treatment the patient consulted the physician who had sent her, who told her that she could not possibly stand roentgen irradiation and that it was evident that an overdose was being given and that she was likely to be burned, or that irradiation through her clothes was dangerous. This necessitated a soothing letter to the physician to get him to quiet the patient and induce her to return. In a good many instances the referring physician or surgeon attempted to direct the treatment, with the inevitable result that the patient lost confidence in her own physician and also in the radiologist and abandoned the treatment.

It is always necessary to warn the patient about not getting sunburned or having ultraviolet ray treatment, as no matter where this sunburn is the physician not infrequently considers it a radiation burn and so informs the patient. Of course such misinformation, though an amusing revelation of the psychology of the practitioner, greatly increases the difficulty of handling the patient, strengthens the effect of backstair gossip furnished by her friends concerning the horrible burns produced by x-rays and the danger of cancer following such treatment, and may result in threats of law suits and other annoyances to the radiologist, especially among the more ignorant type of patient. These are minor details, but after all they are a part of the therapy of these patients, who are often highly nervous from their prolonged bleeding and endocrine disturbances.

On the other hand, with the cooperation of the referring physician, it is astonishing to see how quickly these patients react to the treatment. Not infrequently the neurotic types will begin to improve after three or four treatments, and that this is not entirely a psychic phenomenon is proved by the fact that they continue to feel better and even after the menopause is induced return to tell how well they feel and how their nervous symptoms have disappeared. There are always a few patients, of course, whose alleged symptoms from fibroids are entirely a by-product of a neurosis and after the fibroid has disappeared such neuroses will continue. There is an amusing record on one of my patients' histories, the husband writing that his wife had nervously collapsed after the irradiation was completed; that she was much worse than she had ever been, and that he regretted that she had ever been treated, which regret was also accompanied by a refusal to pay the bill. A year later, however, the woman came to my clinic and said that she had never been so well and that all her symptoms had disappeared. This was evidently a case of neurosis of a premenopausal type accompanied by a fibroid and some menorrhagia, and after these inciting agents had been removed the patient gradually improved. But the mere mechanical shrinking of the fibroid had much less to do with the situation than the relief of the premenopausal instability.

In this connection I have had three patients referred to me by neurologists with a premenopausal psychosis, who after the induction of the menopause, instead of being made worse, rapidly improved, according to the statements furnished me by the referring physicians.

There are several very satisfactory examples of threatened cardiac breakdowns in patients with severe organic lesions which have apparently been averted by the induction of a menopause. I doubt that the disappearance of the fibromyomas had anything to do with the patients' improvement.

Other interesting by-products have been the complete relief of intractable constipation and, in two instances, of severe hemorrhoids following shrinkage of a large soft fibroid filling the pelvis and pressing on the rectum.

While in general very large fibroids have been considered as belonging to the preferably operable group, there have been three patients in my series with fibroids that reached the umbilicus or above whose growths have entirely disappeared, according to the referring gynecologists. These patients all refused operation; they were highly nervous and anemic, and their improvement was remarkable and rapid.

There have been four unpleasant occurrences. In one case a careful physical examination was made before a

patient referred for fibroids was treated and a small carcinoma of the cervix was discovered. The patient had previously been examined by a competent surgeon who had overlooked the lesion. In another an enlarged uterus had been curetted, but a diagnosis of carcinoma could not be made from the material. The patient was sent for irradiation. After six exposures the bleeding continued and the patient was referred back for another curettage. This material showed a beginning adenocarcinoma of the body and a hysterectomy was done. The patient four years later is in perfect health.[4]

In another patient, carcinoma of the body was suspected, but after she had been referred to a competent gynecologist he reported that only a fibroid was present. The patient was then irradiated and the bleeding stopped. But two years later she reappeared with a well developed carcinoma of the body. Looking back over the situation I realize that a curettage should have been insisted on, for it is generally acknowledged that at least a fourth of the cases of carcinoma of the body are not diagnosed clinically.

In another case, two years after irradiation of a fibroid, a surgeon did a myomectomy on a small pedunculated fibroma, a wholly unnecessary operation. Three months later a carcinoma of the cervix was noticed, which necessitated a hysterectomy.

These cases illustrate one very important point; namely, that while the actual conduct of the radiation treatment may be done by some one who is not familiar with gynecologic diagnosis, in such a situation it is absolutely necessary that there should be associated with the radiologist a well trained gynecologist who shall make careful examination of the patients before irradiation is initiated and control their condition accurately afterward. When surgeons come to realize that irradiation offers a valuable therapeutic adjuvant to their work, we shall see the same cooperative use of the x-rays as we see today with the use of radium. Most of the important clinical contributions to radiation therapy from a gynecologic aspect have been made by gynecologists who have been interested in the use of radium. This is true of the heads of the great German clinics and is well illustrated in this country by Kelly, Schmitz, of Chicago, the late John G. Clark, Howard Taylor, the clinicians of the Huntington Hospital of Boston and of the Memorial Hospital of New York, and a host of men who are practicing surgeons, using radiation methods whenever they seem appropriate. The complicated machinery necessary for the production and measurement of roentgen radiations has hampered the use of this type of radiation by the surgeon himself, and this paper is in fact a plea for the wider use of this simpler and cheaper agent.

No example of myosarcoma of the uterus has been seen in my irradiated series, but as I have said, these growths are rare and practically never diagnosed, but are accidentally found after operation for fibroids.

The highly malignant sarcomas of the endometrium and the rare grapelike sarcomas of the cervix are usually accompanied by such furious bleeding that a diagnostic curettage is almost always done and the nature of the tumor recognized. There is no evidence in any of the cases studied that the roentgen treatment made the patients liable to carcinoma or sarcoma, and a survey of the literature shows the same thing. If the standpoint of some extremists is accepted that every irradiated uterus is a potential producer of a tumor, then logically every woman's uterus should be excised after the age of 40, a prophylactic procedure which will scarcely receive popular acceptance.

No recurrence of a fibroid has been observed after definite establishment of the menopause. In two patients during a course of treatment, the observing surgeon reported that he thought the growth was slightly larger, but a year later in both cases found a uterus of practically normal size. In several young patients a return of the bleeding required further treatment after the lapse of a year or two; in one, after four years. Six patients complained of a leukorrhea lasting for a month or so after the treatment was completed.

My impression is that the menopause ensuing after irradiation with x-rays is not necessarily severe. Some of the patients reported absolutely no symptoms; others, from three to six months of vasomotor disturbance. In two instances hot flashes have persisted for a year or more entirely uninfluenced by ovarian extract. Both these patients were of a rather nervous type and are so thankful that their premenstrual headaches and other symptoms have been relieved that they regard the hot flashes as unimportant.

In five cases out of 200, eight treatments did not check the bleeding and the patients were therefore operated on by their referring surgeons. There were no lesions found to explain this, except in one case in which a submucous fibroid was demonstrated. In another patient who had a submucous fibroid, the bleeding was not checked with the usual number of treatments, and a considerable longer series was required. This is in line with the experience of other workers.[5] In one case the supposed submucous fibroid turned out to be a sarcomatous polyp. A curettage had been done six months before and nothing had been found. The flow was not checked by irradiation and on examination of the patient a polyp was found. The patient was therefore referred back to the surgeon, who removed the polyp projecting from the cervix, which proved microscopically to be sarcomatous, and a hysterectomy was done. No trace of neoplasm was found microscopically in the uterus and the patient is still well.

It is doubtful whether the somewhat complex procedure recommended by Michon of injecting the uterine cavity with iodized oil and then determining the size and shape of the cavity by a roentgenogram would have avoided these errors.

A study of the records shows that, in about 90 per cent of the private patients without complications receiving a complete series, a satisfactory clinical cure was obtained. In more than half of these there are records that there is now no evidence of fibroma being present. In the other half the records read that the growth has practically disappeared or that there is a small nodule or a pedunculated fibroid still palpable. In the dispensary type, the results were even better, because about all these women desire is to be relieved of the bleeding or the extreme pressure symptoms. So there are clinically fewer failures in this group than in the more highly sensitive type.

I have not used radium in the treatment of fibromyomas, believing that x-rays are preferable, nor have I used the heavy single dose roentgen treatment of the German gynecologists. Two patients that had been exposed to a single huge dose of high voltage x-rays in a European clinic had to be irradiated again because

4. An interesting example of a similar type is given by Clark and Keene: Uterine Hemorrhage of Benign Origin Treated by Irradiation, J. A. M. A. **79**: 546-550 (Aug.) 1922.

5. For example, Béclère: J. d. radiol. et d'électrol. **5**: 449-463 (Oct.) 1921; **6**: 471 (Aug.) 1922.

of the reappearance of menorrhagia. It seems to me that the closer we imitate nature in the production of ovarian atrophy, the more satisfactory the results will be.

### CONCLUSIONS

Many uncomplicated fibromyomas are still removed surgically which could perfectly well be treated by roentgen irradiation. The advantages of the x-rays are the lack of risk, the simplicity of the treatment, the certainty of the results, and the low cost to the patient. Treatment with radium is more complicated and since it is a minor surgical operation requires hospitalization, while the overhead for capital charges and insurance necessitates a higher cost to the patient.

In young patients myomectomy is preferable as permitting future pregnancies, and surgery is indicated in those persons with ovarian disease and inflammatory complications.

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## ABSTRACT OF DISCUSSION

DR. HENRY SCHMITZ, Chicago: I should like to reiterate in a condensed form the rules established in the treatment of myomas of the uterus and generally observed in the gynecologic clinics of teaching hospitals. A myoma not causing symptoms does not require any treatment. The bleeding, uncomplicated, nondegenerative myoma seen in the menopause period of life and not larger than a pregnant uterus of the first trimester indicates radiation therapy. All other myomas require surgery. Myomectomy should be done in the young with few myomas, and hysterectomy in older persons. Every bleeding myomatous uterus requires a diagnostic curettage before radiation treatment is begun. It is thus possible to exclude hidden complications of a malignant nature. The incidence of carcinoma occurring in a cervical stump after supravaginal hysterectomy is very much smaller than the operative mortality of total hysterectomy. It can be still further reduced by thoroughly cauterizing the cervix with the electric cautery when convalescence from hysterectomy is complete and at the time the patient is ready to leave the hospital. The complications which Dr. Wood has seen following radium treatment are exceptions. They could have been avoided with proper care; yet one must concede they probably would not have occurred if x-rays had been used. A discussion of radiation therapy from an unbiased and scientific standpoint, as has been done by the author, will do much toward the recognition of radiation therapy as one of the approved and standardized methods of treatment in myomas of the uterus, with the qualifications cited.

DR. G. E. PFAHLER, Philadelphia: Dr. Wood spoke of treating patients in the childbearing period. In general, I agree with what he said. When myomectomy will save the uterus and the function of the ovaries, it should be done; but that is not an absolute rule. Dr. Wood speaks of some danger of the radiation doing harm to the offspring, and I am forced to refer to a case which illustrates both these points. A patient came to me on the anniversary of her wedding day. She had just been operated on for the removal of a fibroid. She was found to be pregnant at the time of the operation and therefore the fibroid was not removed. Immediately after the operation, however, she aborted a monster. Then she was referred to me for roentgen treatment. We knew where the fibroid was situated. I treated only the fibroid, which disappeared completely. The patient did not stop menstruating. Since that time she has given birth to two healthy children and they have remained healthy. The important point is this: The patient was in the childbearing period. She aborted a monster before the irradiation. And who would not have assumed that the monster was due to irradiation if we had irradiated the patient first? Therefore, we cannot always assume that if some defect occurs in an offspring following irradiation, it might not have occurred independently of the irradiation.

DR. ALBERT SOILAND, Los Angeles: It is a pleasure to listen to a man of Dr. Wood's standing, who has the courage, despite his present connections, to tell the truth about the treatment of fibroid tumors. The more we learn about this work, the more we see demonstrated that the so-called dangerous results of irradiation in the treatment of fibroids are rapidly disappearing. The statement that one must not treat large fibroids is all foolishness. Of course, one can remove them much quicker by operation, and many times that is the method of choice. Regarding the point Dr. Wood brought up about the surgeon making a diagnosis, in the presence of a suspected malignant condition of the uterus, I think it is criminal to attempt to operate unless the surgeon is prepared to remove the uterus immediately after a frozen section has been taken. There are many young surgeons making such attempts in the presence of a malignant growth and I am sure they vaccinate the entire uterine body while waiting for the delayed laboratory report.

DR. B. H. ORNDOFF, Chicago: I thoroughly agree with what Dr. Pfahler said, and should like to add that with careful injection of the uterus a diagnosis can be made in many cases and the necessity and dangers of curettage be avoided.

DR. H. J. ULLMANN, Santa Barbara, Calif.: Rarely is a patient referred to me for the treatment of fibromas by a surgeon, but it is becoming more and more common to have these patients referred by internists. I wish to take exception to Dr. Soiland's argument that one can treat all fibromas regardless of size, for I have had several unfortunate experiences as a result of such enthusiasm. I have preferred to use radium in most cases because of the fear of malignant conditions and the possibility of doing a diagnostic curettage before the insertion of radium. But it must be remembered that my patients practically all come from internists who have made a rapid examination and have found an enlarged uterus. It is not fair to the patients to refer them to a gynecologist for a diagnostic curettage before irradiation because of the expense involved, and it is not fair to ask the gynecologist to do it for nothing. I have found, therefore, that the use of radium simplifies matters, as the curettage and radium application are made at the same time. One must always consider pregnancy when a woman with an enlarged uterus is referred. I had such a case referred to me not long ago in which the uterus was about 2 inches above the symphysis. The patient insisted that she could not be pregnant, although she had missed two or three menstrual periods. She had had a pregnancy seven or eight months before and the physician did not believe she was pregnant; I was in doubt, but believed the chances were against pregnancy. A roentgenogram was made and I found a well developed fetus. It would have been unfortunate to irradiate that patient. I should like Dr. Wood to tell us a little more about his technic. He stated that he used about 75 per cent of the erythema dose. Do the eight treatments mean eight complete courses—75 per cent front, 75 per cent back, and 75 per cent delivered into the uterus—or do they mean eight sittings of 75 per cent each given at one time? Another reason for using radium in the younger patients is that there is less harm done to the ovary and a permanent recovery is therefore more likely than after treatment by the roentgen ray.

DR. FRANCIS CARTER WOOD, New York: As to the dangers from coexisting carcinoma, my patients come largely from about five gynecologists in New York. They are of all types, rich and poor, and they are referred with a letter stating they have been examined and that carcinoma is not present. I consider that a sufficient safeguard, although usually one of my colleagues who is working with me examines the patient and verifies the condition. If the patient comes in without examination, I have a gynecologist examine her for me. The patient is perfectly willing to pay the charge. The question of pregnancy is an important one. I do not agree with Dr. Soiland as to the dangers of curettage, even in the presence of carcinoma, because practically no carcinoma ever goes with a curettage. If a curettage were dangerous we would never have any cured carcinomas. We know that we are getting cures, and it seems to me we can rule out the dangers of curettage. I think the history and clinical signs of carcinoma of the uterus are so characteristic that the diagnosis should be made without a curettage. Therefore, the radiologist can, if he studies his case carefully enough, takes the history and makes the examination, exclude most of the cases of carcinoma. I use a 75 per cent erythema dose on the skin, with a portal 10 or 15 cm. square

placed centrally over the uterus, expecting to get enough scattered to cover the ovaries. This dose is given in front one time and in back the next time. We have not had any crossover burns. If the patient is neurotic, we give a shorter treatment, say ten minutes, which would be half of 75 per cent, or about a 40 per cent erythema dose. I use 0.5 mm. of zinc and 1 mm. of aluminum, with voltages of about 150 kilovolts. Eight of those treatments, a week or ten days apart, will sterilize the average woman of 40. A woman of 25 or 30 may have to have ten or twelve or even more treatments, and the pedunculated submucous or subserous myomas can be cured by irradiation, but they may take twelve or fourteen of such treatments two weeks apart. Another thing I mentioned in my paper was that these patients get away quickly. I irradiate them through their clothes, a practice for which I have been criticized; but the modern costume, as I see it, offers no filtration to the roentgen ray, and we always examine these patients' skins after the second or third dose to see that there is no reddening. By that procedure we can irradiate the patient at a total expense of time of only about half an hour.

## HEREDITARY ASPECT OF ACHLORHYDRIA IN PERNICIOUS ANEMIA

### A STUDY OF GASTRIC ACIDITY IN 154 RELATIVES OF 109 PATIENTS HAVING PERNICIOUS ANEMIA *

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Fenwick,[1] in 1877, was the first to discover gastric atrophy in association with severe anemia. Cahn and von Mering,[2] in 1886, were the first to notice the absence of free hydrochloric acid in pernicious anemia. Since that time much has been written regarding the occurrence of achlorhydria in pernicious anemia. The statistics of various authors differ considerably as to the incidence of free hydrochloric acid in this disease. It is now the consensus that practically all cases of pernicious anemia are accompanied by achlorhydria. The statistics of Levine and Ladd[3] on 143 cases probably represent the present opinion as clearly as possible. They found achlorhydria in all except three of their 143 cases of pernicious anemia, and, in two of these three, the diagnosis of pernicious anemia was somewhat doubtful. This leaves only one of the 141 definite cases in which there was free hydrochloric acid. The cases of pernicious anemia that have been encountered in the Mayo Clinic have never been analyzed as to the occurrence of achlorhydria, but it is extremely rare in my experience to find free hydrochloric acid.

The question naturally arises as to whether the achlorhydria precedes pernicious anemia or whether the two conditions develop simultaneously. I do not find any record in the literature of achlorhydria developing during the course of pernicious anemia, and I have not observed such a phenomenon myself. Various authors[4] have reported the appearance of achlorhydria many years preceding the appearance of pernicious anemia (table 1). Meulengracht[5] believes that achlorhydria is one of the first symptoms of pernicious anemia rather than that it has a causative significance. One patient in the Mayo Clinic had manifested symptoms of achlorhydria for twelve years, and one for eighteen years, before the symptoms of pernicious anemia developed. It seems likely, therefore, that achlorhydria usually, if not always, precedes the development of pernicious anemia.

Many of the authors cited believe achlorhydria to be the essential predisposing cause of pernicious anemia. Hurst,[6] particularly, is of this opinion. He believes that the achlorhydria allows intestinal infection to take place because of the lack of the antiseptic effect of hydrochloric acid, and that this intestinal infection, in turn, leads to the absorption of toxic products in the intestinal tract. There are essentially two types of toxin produced, hemotoxin and neurotoxin, and the occurrence of the anemia or of the neurologic symptoms as the outstanding feature of the disease depends on which one of these toxins is in the ascendency. He believes that the achlorhydria is usually congenital, but also that it may be produced otherwise, as by total gastrectomy or gastroenterostomy; he cited several authors in defense of this view. In Weinberg's[7] opinion, many persons who have achlorhydria, and who are related to patients with pernicious anemia, have a blood picture suggestive of latent pernicious anemia, including an increased hemoglobin index, leukopenia, relative lymphocytosis, occasional myelocytes, myeloblasts, normoblasts and macrocytosis. He speaks of "pernicious anemia without anemia" in these cases. He recognized, with

TABLE 1.—*Achlorhydria Preceding Pernicious Anemia*

| Author | Families in Which Cases Were Observed | Interval Between Achlorhydria and Pernicious Anemia |
|---|---|---|
| Riley: J. A. M. A. **85**: 1908 (Dec. 12) 1925 | 2 | Twenty and twenty-five years |
| Riley | Large number | Eight and ten years |
| Kiley | Large number | Four and five years |
| Faber and Gram: Arch. Int. Med. **34**: 827-832 (Dec.) 1924 | 4 | Twelve, eight, seven and three years |
| Sturtevant: J. A. M. A. **85**: 1638-1639 (Nov. 21) 1925 | 1 | Fourteen years |
| Levine and Ladd: Bull. Johns Hopkins Hosp. **33**: 254-256 (Aug.) 1921 | 3 | Six years and twenty and three months |
| Kuttner in Kraus and Brugsch: Spezielle Pathologie und Therapie innerer Krankheiten **5**: 678-679, 1921 | 2 | Five and eight years |
| Cobet and Morawitz: Ztschr. f. ang. Anat. **6**: 244-257, 1920 | 1 | Seven years |
| Bie: Lancet **1**: 631-633 (April 1) 1922 | 1 | Twelve or thirteen years |
| Hunter: Canad. M. A. J. **13**: 38-43 (Jan.) 1923 | 1 | Two years |
| Lichty: J. A. M. A. **48**: 2177-2180 (June 29) 1907 | 1 | Eight years |
| Queckenstedt: Deutsche med. Wchnschr. **1**: 883-887, 1913 | ... | "Long time" |
| Carey: Minnesota Med. **9**: 385-391 (July) 1926 | ... | Probably precedes pernicious anemia |
| Naegeli: Deutsches Arch. f. klin. Med. **124**: 221-239, 1917 | 1 | Long time |
| Lichty: J. A. M. A. **48**: 2177-2180 (June 29) 1907 | 1 | Probably thirty-five years |
| Schauman: Ztschr. f. ang. Anat. **6**: 258-288, 1920 | 1 | Many years |
| Conner | 3 | Twelve and eighteen years |

* From the Division of Medicine, the Mayo Clinic.

* Read before the Section on Gastro-Enterology and Proctology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

1. Fenwick, Samuel: Atrophy of the Stomach, Lancet **2**: 1-4, 1877.
2. Cahn, A., and von Mering, J.: Die Säuren des gesunden und kranken Magens, Deutsches Arch. f. klin. Med. **39**: 233-253, 1886.
3. Levine, S. A., and Ladd, W. S.: Pernicious Anemia: A Clinical Study of One Hundred and Fifty Consecutive Cases with Special Reference to Gastric Acidity, Bull. Johns Hopkins Hosp. **32**: 254-266 (Aug.) 1921.
4. Authors mentioned in table 1.
5. Meulengracht, E.: The Heredity Factor in Pernicious Anemia, Am. J. M. Sc. **169**: 177-195 (Feb.) 1925.
6. Hurst, A. F.: Pernicious Anemia, Brit. M. J. **2**: 978-979, 1922; The Pathogenesis, Prophylaxis and Treatment of Pernicious Anemia, ibid **2**: 676-678 (Oct. 15) 1927.
7. Weinberg, F.: Achylia gastrica und perniziöse Anämie, Deutsches Arch. f. klin. Med. **126**: 447-473, 1918.

Martius,[8] primary and secondary achylia, classifying the achylia in pernicious anemia as primary. Schauman [9] expressed the opinion that an endogenous factor is necessary for the operation of an exogenous factor in the development of pernicious anemia, these two together producing the disease. He believes that an endocrine influence is likely and that achylia is not always necessary in the development of the disease.

In defense of the view that the lack of antiseptic effect of hydrochloric acid may possibly have some significance, the work of Bartle and Harkins [10] may be mentioned. They showed definitely the germicidal value of gastric juice and of hydrochloric acid in vitro. The hydrochloric acid was used in the same strength in which it is ordinarily found in gastric juice.

The hereditary aspect of pernicious anemia has been studied by various authors. Many of them believe, from the isolated instances of the occurrence of the disease in several members of the same family, that pernicious anemia definitely has an hereditary basis. The cases observed at the Mayo Clinic have not been analyzed as to the occurrence of pernicious anemia in other members of the family, but familial incidence has been noted in many instances. Two patients of one family, a brother and a sister, gave the history that four of their siblings had died of the disease. There is a record of another family of four siblings, two of whom have been patients at the clinic. There are many instances in the Mayo Clinic of two or more sufferers from pernicious anemia in the same family. I have attempted to scan the literature for the various reports of the familial occurrence of pernicious anemia. Possibly some of the reports [11] are of questionable accuracy but they are included in table 2.

TABLE 2.—*Pernicious Anemia in Several Members of a Family*

| Author | Families | Members of Family Having Pernicious Anemia |
|---|---|---|
| Klein: Wien. klin. Wchnschr. **4**: 721, 745, 1891 | 1 | Two brothers and sister |
| Brandwell: Anemia and Some of the Diseases of the Blood-Forming Organs and the Ductless Glands, 1899, p. 56-138 | 1 | Patient, brother, mother, two uncles and aunt |
| Caccini: Riforma med. **3**: 3-6; 8-10, 1900 | 1 | Father, son and daughter |
| Cabot: in Osler and McCrae: Modern Medicine, ed. 1, **4**: 612-639, 1908 | 2 | (1) two sisters; (2) brother and sister |
| Gilbert and Emile-Weil: Bull. et mém. Soc. méd. d. hôp. de Paris **2**: 543-548, 1910 | 1 | Two brothers |
| Patek: J. A. M. A. **56**: 1315-1318 (May 6) 1911 | 1 | Two brothers, sister, paternal uncle and cousin |
| Andrew: Klinischer Beitrag zur Frage der schweren Aenaemien, 1912 | 1 | Patient and sister |
| Willson: J. A. M. A. **59**: 767-770 (Sept. 7) 1912 | 1 | Patient with combined sclerosis and aunt with pernicious anemia |
| Schüpbach*: Cor.-Bl. f. schweiz. Aerzte. **43**: 1535-1541, 1913 | 1 | |
| Matthes*: Verhandl. d. deutsch. Kong. f. inn. Med. **30**: 290-296, 1913 | Several | |
| Pentscheff*: Quoted by Tscherning | | |
| Bartlett: J. A. M. A. **60**: 176-179 (Jan. 18) 1913 | 1 | Father and three sons |
| Henneffer: Ztschr. f. klin. Med. **79**: 103-127, 1914 | 1 | Patient and father |
| Rothe: Ztschr. f. klin. Med. **79**: 266-286, 1914 | 1 | Two brothers |
| Minot: in Oxford Medicine **2**: 589-679, 1920 | 1 | Brother, two sisters, maternal male cousin, aunt and uncle |
| Meulengracht: Ugesk. f. Laeger **82**: 777-790 (June 17) 1920; Folia haematol. **2**: 217-233, 1922 | 1 | Four brothers and nephew |
| Carr: Am. J. M. Sc. **160**: 737-752 (Nov.) 1920 | 1 | Patient and mother |
| Levitan and Ladd: Bull. Johns Hopkins Hosp. **33**: 254-268 (Aug.) 1921 | 9 | One or more other members besides patient |
| McAlpin: Southwest J. Med. & Surg. **30**: 1-2 (Oct.) 1922 | 1 | Father, two daughters, two sons, three grandsons and two greatgrandsons (one of the latter was only patient observed by author; evidence mainly hearsay) |
| Mustelin: Acta med. Scandinav. **56**: 411-418 (April) 1922 | 2 | (1) mother, daughter and granddaughter; (2) patient, mother, cousin and aunt |
| Tscherning: Deutsche med. Wchnschr. **48**: 1545-1547 (Nov. 17) 1922 | 1 | Two brothers and sister |
| Decastello: Wien. klin. Wchnschr. **36**: 258-260 (April 9) 1923 | 1 | Three sisters and maternal uncle |
| Riley: Bull. Battle Creek San. & Hosp. Clinic **18**: 195-231, 1922-1923 | 12 | Two or more in each family |
| Gilford: Lancet **1**: 64-66 (Jan. 13) 1923 | 2 | (1) woman patient and two cousins; (2) woman patient, two brothers and uncle |
| Faber and Gram: Arch. Int. Med. **34**: 827-832 (Dec.) 1924 | 1 | Father and son (daughter had simple anemia) |
| Morris and Falconer: Arch. Int. Med. **34**: 757-777 (Dec.) 1924 | 3 | (1) woman patient and sister (questionable case); (2) patient and mother; (3) patient, brother and sister (questionable case) |
| Panton, Maitland-Jones and Riddoch: Lancet **1**: 529-533 (March 15) 1924 | 1 | Patient (questionable), maternal aunt and uncle |
| Willson and Evans: Bull. Johns Hopkins Hosp. **35**: 38-46 (Feb.) 1924 | 5 | Patients had pernicious anemia; relatives died of anemia not definitely pernicious |
| Schaumann and Saltzman in Schittenhelm: Handbuch der Krankheiten des Blutes und der blutbildenden Organe **2**: 100-258, 1925 | 24 | (Two members of fifteen families had bothriocephalus anemia); two in seven families had cryptogenetic pernicious anemia. In two families bothriocephalus in one member and cryptogenetic pernicious anemia in another member |
| Gulland and Goodall: The Blood: A Guide to Its Examination and to the Diagnosis and Treatment of Its Diseases, ed. 3, 1925, pp. 126-170 | 2 | (1) patient, father, paternal uncle, brother and sister; (2) patient, father, uncle and sister |
| Johannessohn: Deutsche med. Wchnschr. **51**: 1953 (Nov. 20) 1925 | 1 | Two brothers |
| Hunter: Quoted by Hurst | 3 | Familial occurrence mentioned |
| Dorst: Am. J. M. Sc. **172**: 173-185 (Aug.) 1926 | 1 | Mother and four children |
| Maclachlan and Kline*: Am. J. M. Sc. **172**: 533-543 (Oct.) 1926 | 1 | |
| Schroll: Ugesk. f. Laeger **88**: 276-277 (March 18) 1926 | 1 | Mother and daughter |
| Tscherning: Deutsche med. Wchnschr. **2**: 707, 1926 | 1 | Three sisters |
| Carey: Minnesota Med. **9**: 385-391 (July) 1926 | 10 | Two or more in family |
| Hurst: Brit. M. J. **2**: 676-678 (Oct. 15) 1927 | 12 | Two or more in family |

* Schüpbach reported a patient having pernicious anemia in pregnancy whose sister had died of pernicious anemia. Matthes saw the familial occurrence of pernicious anemia several times, for instance three cases in one family. Pentscheff mentioned the familial occurrence of pernicious anemia. Maclachlan and Kline reported anemia in four generations; first generation hearsay, second generation observed by relatives and family physician; in third and fourth generations thirteen died of anemia (seven pernicious) and four who are living have pernicious anemia. Neuberger (not mentioned in the table) stated four of sixty-five patients believed the disease occurred in other members of the family, but he found them to be mistaken.

Several authors, including Hurst,[6] Albu,[12] Jung,[13] and Udaonda,[14] have found achlorhydria in one member of a family and pernicious anemia in another. Hurst [15] mentioned six such instances in his own experience and twenty-six reported by others. Martius spoke of achlorhydria as a constitutional anomaly and believes it a necessary exciting cause of pernicious anemia. He found achlorhydria in three children of a man who had

8. Martius, F.: Achylia Gastrica, Leipzig, F. Deuticke, 1897; Achylia gastrica und perniziöse Anämie, Med. Klin. **18**: 481-484, 1916.

9. Schauman, O.: Perniziöse Anämie, Konstitution und innere Sekretion, Ztschr. f. ang. Anat. **6**: 258-288, 1920.

10. Bartle, H. J., and Harkins, M. J.: The Gastric Secretion: Its Bactericidal Value to Man, with a Report of Bactericidal Experiments, Am. J. M. Sc. **169**: 373-388 (March) 1925.

11. Authors mentioned in table 2.

12. Albu, A.: Die verschiedenen Formen der Achylia gastrica, ihre Pathogenese und Behandlung, Therap. d. Gegenw. **54**: 433-438, 1913.

13. Jung, F. A. R.: Die Häufigkeit und Erblichkeit von Magen-Darmbefunden in Familien, Arch. f. Verdauungskr. **8**: 86-102, 1902.

14. Quoted by Hurst (footnote 15).

15. Hurst, A. F.: The Pathogenesis of Subacute Combined Degeneration of the Spinal Cord, with Special Reference to Its Connection with Addison's (Pernicious) Anemia, Achlorhydria and Intestinal Infection, Brain **48**: 218-232 (June) 1925.

died of pernicious anemia, and also in a 10 year old son of a patient who had pernicious anemia. Weinberg examined twenty-two children and two sisters of twelve patients who had pernicious anemia; nine of the twenty-two children and one of the two sisters had achlorhydria. The children were healthy and the younger of those who had achlorhydria were 3, 4, 5 and 6 years of age; the age of each of two was 10 years. I have not been able to find any extended study of acidity in normal children. Dorst,[16] in a study of six persons not affected with pernicious anemia in a family in which there were five cases of pernicious anemia, found that two of the family had achlorhydria and two hypochlorhydria. He believes that achlorhydria is congenital and of causative significance in pernicious anemia. Queckenstedt[17] found achlorhydria in one of four children of a patient with pernicious anemia, and in two the gastric acidity was low. Houston[18] and K. Faber[14] both spoke of the occurrence of achlorhydria in one member of a family and of pernicious anemia in another member. Neuburger,[19] however, found achlorhydria in only one of twenty-nine relatives of fourteen patients having pernicious anemia.

TABLE 3.—*Achlorhydria in Normal Subjects*

| Author | Type of Analysis After Test Meal | Subjects | Proportion with Achlorhydria, per Cent |
|---|---|---|---|
| Dahl-Iverson: Lyon chir. **24**: 526-632 (Sept.-Oct.) 1927 | Single at end of one hour | 128 | 11 |
| Bennett and Ryle: Guy's Hosp. Rep. **71**: 286-318 (July) 1921 | Fractional | 100 | 4 |
| Bennett and Ryle (second series) | Fractional | 60 | 3.3 |
| Baird, Campbell and Hern: Guy's Hosp. Rep. **74**: 339-353 (July) 1924 | Fractional | 57 | 3.5 |

Most of the work concerning the hereditary aspect of achlorhydria in its relationship to pernicious anemia has consisted of the investigation of several members of one or two families. Weinberg and Neuburger have reported the investigation of twenty-four and twenty-nine relatives, respectively, with diverse results. Of course, conclusions cannot be based on the investigation of so small a number.

For several years I have been studying this subject and have, when agreeable to the relative, given a test-meal to whatever relative accompanied a patient who presented himself with pernicious anemia. I have usually had good cooperation on the part of the relative when it has been explained to him that it is important to know whether or not he lacks free acid in the gastric content. Altogether I have investigated 154 blood relatives of 109 patients having pernicious anemia and sixty marital partners. Husbands and wives have been investigated because I wanted to find out whether common living conditions might have anything to do with the production of achlorhydria. They also serve as a good control series. All except eleven of the 109 patients were examined at the Mayo Clinic. The diagnosis of pernicious anemia in the eleven who were not examined at the clinic seemed to be well established according to the history.

I have analyzed the statistics of the husbands and wives and of the blood relatives separately. Of the blood relatives, 154 in number, ninety-seven have been registered at the Mayo Clinic, and fifty-seven considered themselves in good health and underwent only the examination by test meal, and, in most cases, an examination of the blood. Of those relatives who registered, thirty-four were found to be healthy and sixty-three diseased. Those patients classified as having chronic tonsillitis, infected teeth, acute coryza, deflected nasal septums, deafness, varicocele, cystic mastitis, sterility and simple achlorhydria were considered normal for the purposes of this investigation. Those who were classified as having chronic nervous exhaustion and migraine were included among the diseased registrants because of the possible effects of these two conditions on the occurrence of free hydrochloric acid.

TABLE 4.—*Achlorhydria Among Patients with Various Diseases*

| Author | Type of Disease | Patients | Type of Analysis After Test Meal | Proportion with Achlorhydria, per Cent |
|---|---|---|---|---|
| Keefer and Bloomfield: Bull. Johns Hopkins Hosp. **39**: 304-329 (Nov.) 1926 | No organic disease | 570 | Single at end of one hour | 14.5 |
| Keefer and Bloomfield (same series) | General diseases | 1,500 | Single at end of one hour | 26 |
| Kelling: Arch. f. Verdauungskr. **15**: 568-583, 1909 | General diseases | 3,147 | Single at end of one hour | 10.5 |
| Andresen: Ann. Clin. Med. **5**: 472-482, 1926 | Gastro-intestinal | 4,000 | Fractional | 10 |
| Bell: Guy's Hosp. Rep. **72**: 302-314 (July) 1922 | Gastro-intestinal | 425 | Fractional | 11.8 |
| Wright: Minnesota Med. **11**: 73-79 (Feb.) 1928 | Gastro-intestinal | 778 | Fractional in only about a fourth of cases | 15 |
| Eggleston: J. A. M. A. **83**: 260-265 (July 26) 1924 | Not stated * | 2,399 | Single at end of one hour | 18 |
| Eggleston | Not stated * | 2,730 | Fractional † | 10 |
| Hurst: Lancet **1**: 111-115 (Jan. 20) 1923 | Not stated * | 325 | Fractional † | 10.5 |
| VanderHoof: Am. J. M. Sc. **144**: 170-189, 1912 | Not stated * | 5,000 | Fractional | 10 |
| VanderHoof: South. M. J. **20**: 189-191 (March) 1927 | Variety of medical diseases | 500 | Single at end of one hour | 16.2 |
| Kobiyar: Guy's Hosp. Rep. **76**: 65-75 (Jan.) 1926 | Variety of medical diseases | 1,080 | Fractional | 14.7 |
| Conner | Variety of medical diseases | 5,000 | Fractional ‡ | 15.2 |

* Class of cases not stated, probably largely gastro-intestinal cases.
† Eggleston found 8.5 per cent and Hurst 9.2 per cent additional patients having achlorhydria at end of first hour.
‡ Eighty per cent of the patients showing achlorhydria had a test meal followed by fractional analysis.

In order to have a proper basis for comparison of the statistics concerning relatives of patients having pernicious anemia with statistics concerning normal persons and persons suffering from various diseases other than pernicious anemia, one must study the statistics of other authors[20] in addition to one's own. It seems likely, from the figures quoted in table 3, that achlorhydria would not be present, on an average, in excess of 10 per cent of normal persons of all ages and both sexes.

16. Dorst, S. E.: Familial Pernicious Anemia: A Discussion of an Unusual Group of Cases with a Consideration of Achlorhydria as the Dominant Etiologic Factor, Am. J. M. Sc. **172**: 173-185 (Aug.) 1926.

17. Queckenstedt: Die perniziose Anämie, Deutsche med. Wchnschr. **1**: 883-887, 1913.

18. Houston, quoted by Hurst, A. F.: Addison's (Pernicious) Anemia and Subacute Combined Degeneration of the Spinal Cord, Brit. M. J. **1**: 93-100 (Jan. 19) 1924.

19. Neuburger, Joseph; Ueber das familiäre und konstitutionelle Moment in der Aetiologie der Anaemia perniciosa, Deutsche med. Wchnschr. **51**: 1557-1558 (Sept. 18) 1925.

20. Authors mentioned in table 3.

The incidence of achlorhydria in those who had a test meal because of symptoms warranting it would probably be considerably higher [21] (table 4). The incidence of achlorhydria among patients varies, then, from 26 per cent in one series tested by the Ewald meal aspirated at the end of one hour to 10 per cent in another in which the fractional method of analysis was used.

TABLE 5.—*Achlorhydria According to Sex Among Patients with Various Diseases*

| Author | Type of Analysis Following Test Meal | Males | Proportion with Achlorhydria, per Cent | Females | Proportion with Achlorhydria, per Cent |
|---|---|---|---|---|---|
| Kelling | Single at end of one hour | 2,031 | 15 | 1,116 | 19.3 |
| Seidelin: Klin. Wchnschr. **41**: 945-949, 1904 | Single at end of one hour | 25 (aged) | 55 | 45 (aged) | 33 |
| Dedichen: Acta med. Scandinav. (supp.) 6-7, 345-356, 1923 | Single at end of one hour | 36 (aged) | 80 | 63 (aged) | 58.7 |
| Bell | Fractional | 232 | 13.8 | 193 | 16.1 |
| Conner | Fractional* | 691 | 14.6 | 509 | 20.4 |

* Eighty per cent of those having achlorhydria had fractional analysis following a test meal.

Analysis of the incidence of achlorhydria according to sex is found [22] in table 5. There is no significant difference between the two sexes. Analysis [23] of various groups according to age is noted in table 6. All authors thus agree that the incidence of achlorhydria increases markedly with advancing years.

I have analyzed the occurrence of achlorhydria as disclosed by analysis after 5,000 of the total of 14,348 test meals given at the Mayo Clinic during the year 1928. The records have been taken from the files consecutively. In these 5,000 analyses after test meals, achlorhydria was present in 15.2 per cent; 612 (more than 80 per cent) of the analyses in which achlorhydria was found have been made by the fractional method and 150 at the end of one hour after the simple arrowroot biscuit test meal. The results of 1,200 of the 5,000 tests have been analyzed to determine the occurrence of achlorhydria in the different decades in both sexes. In these 1,200, because of the fallibility of figures, the incidence of achlorhydria happens to be 17.1 per cent instead of 15.2 per cent, as in the entire group. The average age of this group of 1,200 is 43 years; of 509 women, 42.1 years, and of 691 men, 43.8 years. Including those tests in which there was achylorhydria at the end of the first hour but free acid later, in 17.4 per cent of the whole group of 5,000 there was achylorhydria at the end of the first hour; this is equivalent to the same percentage of achlorhydria as determined by a single analysis at the end of one hour. The results of these 1,200 test meals are analyzed as to age of the subjects in table 6.

In this series of control test meals the results of analysis of gastric content show an incidence of achlorhydria that agrees very well with that found in most of the reported series of results of test meals among patients. The incidence gradually rises with age, and at the age of 70 and above achlorhydria is found in two thirds of the patients whose gastric content is examined. It is likely, however, that, because of the small number of those at this advanced age who underwent the test, the figures for those of this age are too high.

As these test meals were given usually because of digestive symptoms or because of the suspicion that pernicious anemia was present, it is likely that the incidence of achlorhydria is higher than would be found if a test meal were given as a routine in all cases. Moreover, the incidence is higher than that which might be found in healthy persons.

It is notable that the incidence of achlorhydria in patients having various diseases associated with gastric symptoms differs little in men and women, except in the fourth and sixth decades. During these decades, the incidence in women is distinctly greater. In the age period from 30 to 39, the incidence among men is 4.8 per cent in 186 tests and among women 18 per cent in 146 tests; in the age period from 40 to 49, the incidence in men is 16.2 per cent in 198 tests, and in women 16.6 per cent in 139 tests; in the age group from 50 to 59, the incidence in men is 19.7 per cent in 132 tests, and in women 32.3 per cent in 102 tests.

In addition to the incidence of 15.2 per cent of achlorhydria in the 5,000 cases, there was an incidence of hypochlorhydria of 13 per cent (free acid 1 to 19 in terms of tenth normal sodium hydroxide), of normal acidity of 36 per cent (free acid 20 to 39), and of hyperchlorhydria of 35.8 per cent (free acid 40 and above); 41.4 per cent of the men in this group had hyperchlorhydria (40 or above), as compared with only 14.5 per cent of the women.

TABLE 6.—*Achlorhydria According to Age Among Patients with Various Diseases*

| Author* | Age | Subjects | Proportion with Achlorhydria, per Cent |
|---|---|---|---|
| Liefschütz: Arch. f. Verdauungskr. **12**: 426-455, 1906 | 50 or more | 60 | 37.0 |
| Seidelin | 50 to 89 | 70 | 40.0 |
| Dedichen | 67 to 92 | 99 | 66.6 |
| Kohlyar | 11 to 20 | 18 | |
| | 21 to 30 | 151 | 7.3 |
| | 31 to 40 | 249 | 10.4 |
| | 41 to 50 | 302 | 15.9 |
| | 51 to 60 | 217 | 17.8 |
| | 61 to 77 | 113 | 26.5 |
| Dahl-Iverson | 20 to 30 | 16 | |
| | 30 to 40 | 46 | 9.0 |
| | 40 to 50 | 29 | 3.5 |
| | 50 to 60 | 23 | 19.0 |
| | 60 to 70 | 11 | 37.0 |
| Bell | 11 to 20 | 6 | |
| | 21 to 30 | 70 | 10 |
| | 31 to 40 | 111 | 12.6 |
| | 41 to 50 | 124 | 17.8 |
| | 51 to 60 | 81 | 14.8 |
| | 61 to 74 | 33 | 21.2 |
| Keefer and Bloomfield | 10 to 19 | (In all, 570 subjects were tested) | 11.0 |
| | 20 to 29 | | 7.0 |
| | 30 to 39 | | 7.0 |
| | 40 to 49 | | 17.0 |
| | 50 to 59 | | 21.0 |
| | 60 to 69 | | 35.0 |
| | 70 to 81 | | 40.0 |
| Conner | 0 to 9 | 2 | |
| | 10 to 19 | 9 | 11.0 |
| | 20 to 29 | 144 | 6.2 |
| | 30 to 39 | 332 | 10.5 |
| | 40 to 49 | 337 | 16.3 |
| | 50 to 59 | 232 | 25.4 |
| | 60 to 69 | 129 | 28.0 |
| | 70 and more | 15 | 67.0 |

* Leifschütz and Seidelin used as subjects aged hospital patients; Dedichen used inmates of an old folks' home; Keefer and Bloomfield employed patients found to have no organic disease; Dahl-Iversen used normal individuals; most of Bell's patients had gastro-intestinal disease; Kohlyar employed patients with a great variety of medical disorders many of whom were without gastric symptoms; Conner's patients had a variety of medical disturbances justifying test meals because of symptoms.

The results of the analyses following test meals among the relatives of patients having pernicious ane-

21. Authors mentioned in table 4.
22. Authors mentioned in table 5.
23. Authors mentioned in table 6.

mia are shown in tables 7 and 8. Exactly 80 per cent of those showing achlorhydria had fractional analyses, which is almost exactly the percentage of fractional analyses among marital partners and among the 5,000 control patients. Therefore, the three series are comparable. Two of the group of relatives had achlorhydria as shown by one fractional analysis, and free hydrochloric acid as disclosed by another. These are not included in the group in which achlorhydria was discovered.

TABLE 7.—*Gastric Acidity Among Various Groups of Relatives of Patients with Pernicious Anemia*

| Relationship | Subjects | Average Age, Years | Free Hydrochloric Acid in Terms of Tenth Normal Sodium Hydroxide | Subjects with Achlorhydria | Proportion with Achlorhydria, per Cent |
|---|---|---|---|---|---|
| Sister | 26 | 48.5 | 13 | 13 | 50.0 |
| Brother | 27 | 46.4 | 21 | 6 | 22.2 |
| Son | 43 | 28.8 | 36 | 7 | 16.2 |
| Daughter | 44 | 30.1 | 34 | 10 | 22.7 |
| Mother | 5 | 60.6 | 4 | 1 | 20.0 |
| Father | 2 | 64.5 | .. | 2 | 100.0 |
| Niece | 5 | 29.0 | 4 | 1 | 20.0 |
| Nephew | 2 | 30.0 | 2 | | |
| Total | 154 | 37.1 | 114 | 40 | 25.9 |
| Females* | 80 | 37.9 | 55 | 25 | 31.2 |
| Males* | 74 | 36.2 | 59 | 15 | 20.2 |
| Husbands | 20 | 48.3 | 18 | 2 | 10.0 |
| Wives | 40 | 49.3 | 32 | 8 | 20.0 |
| Total | 60 | 49.0 | 50 | 10 | 16.6 |

| | Subjects |
|---|---|
| Acidity 0 in terms of tenth normal sodium hydroxide (achlorhydria) | 40 |
| Acidity 1 to 19 in terms of tenth normal sodium hydroxide (hypochlorhydria) | 21 |
| Acidity 20 to 39 in terms of tenth normal sodium hydroxide (normal) | 43 |
| Acidity 40 or more in terms of tenth normal sodium hydroxide (hyperchlorhydria) | 50 |
| Total | 154 |

* Blood relatives.

It should be stated that more than half of the group of relatives who were studied either did not have an examination at the Mayo Clinic because in most cases they considered themselves healthy, or were found to be healthy as the result of an examination given them either at their own request or to determine their fitness as blood donors for their sick relatives who had pernicious anemia. It seems safe to say that more than half of the relatives studied were apparently healthy. This fact makes the high incidence of achlorhydria among the blood relatives doubly significant; the expected incidence of achlorhydria among them would be less than that in a control group of patients who had gastric symptoms or pernicious anemia, or in whom pernicious anemia was suspected of being present.

It should be noted that no patient who came to the Mayo Clinic because of pernicious anemia was included among the group of relatives from which conclusions were drawn, even though he might be a relative of some other patient in my series. Among the 154 who were examined as blood relatives, a diagnosis of possible pernicious anemia was made five times and a diagnosis of probable pernicious anemia twice. Secondary anemia was diagnosed nine times, and this was accompanied by achlorhydria in four cases. The effort was to make the statistics representative of the condition of the average close blood relative of a patient with pernicious anemia, rather than to study any one family exhaustively. It seems that statistics regarding a few persons in each of many families are more valuable than a study of many members of a few families. However, in one family seven, in two families five, in two families four, and in four families three members were studied.

## COMMENT

The percentage of achlorhydria of 25.9 among the blood relatives of patients with pernicious anemia is greater (70 per cent) than the percentage of 15.2 among the control group of patients who received test meals on account of various gastric complaints or because they were suspected of having pernicious anemia. This difference is found despite the fact that the average age of the relatives of patients with pernicious anemia is about six years less than that of the control group of patients who received test meals for gastric complaints.

If one compares according to age the incidence of achlorhydria in the two groups, one finds that the percentage of 25.9 among the blood relatives of an average age of 37 years is almost two and a half times the percentage of 10.5 in the control series of patients in the age group 30 to 39 years.

Among those showing achlorhydria, the percentage of those who had fractional analyses and those who had simple analyses of gastric content is almost exactly the same in the series of blood relatives, in the series of marital partners and in the control series of patients. The technic was the same in the three series; all tests were performed under similar conditions. This gives a sound basis for comparison of the incidence of achlorhydria in the three groups.

In the group 40 to 49 years of age, the incidence of achlorhydria is 46.1 per cent in the blood relatives of patients with pernicious anemia and only 16.2 per cent in the control group of patients of the same age, a ratio of almost 3:1. This is the age at which pernicious anemia is most common. Likewise, in the group of blood relatives aged 30 to 39 years, the incidence of achlorhydria is 20 per cent, practically twice as great as the incidence of 10.5 per cent in the control group of patients having gastric symptoms.

The occurrence of achlorhydria in 50 per cent of twenty-five sisters (average age 48 years) of patients having pernicious anemia is three times the incidence of 16.5 per cent in the female control patients aged 40 to 50. It will be noted that achlorhydria is more common among women of a given age both in the group of 1,200 control patients, which was analyzed as to age, and among the blood relatives of patients having pernicious anemia.

The husbands and wives being used as a second control series, it will be seen that the incidence of 10

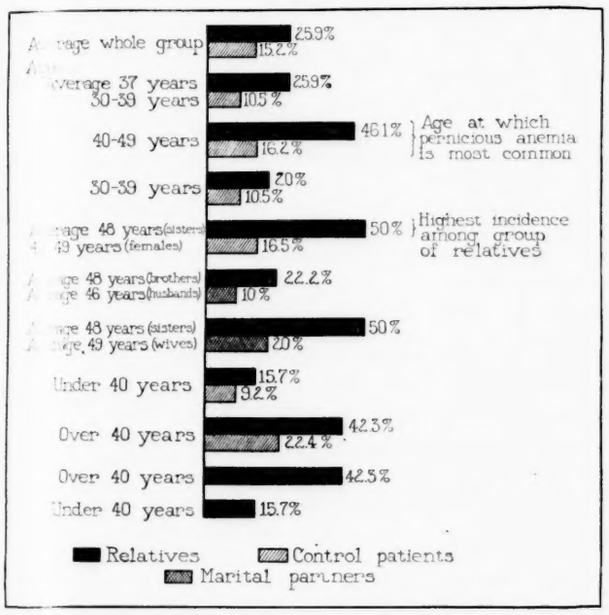
TABLE 8.—*Achlorhydria According to Age Groups among Blood Relatives of Patients with Pernicious Anemia* *

| Age in Decades | Relatives | Subjects with Free Hydrochloric Acid | Subjects with Achlorhydria | Proportion with Achlorhydria, per Cent |
|---|---|---|---|---|
| 10 to 19 | 13 | 12 | 1 | 7.6 |
| 20 to 29 | 37 | 32 | 5 | 13.5 |
| 30 to 39 | 45 | 36 | 9 | 20.0 |
| 40 to 49 | 26 | 14 | 12 | 46.1 |
| 50 to 59 | 17 | 12 | 5 | 29.4 |
| 60 to 69 | 14 | 6 | 8 | 57.1 |
| 70 to 79 | 2 | 2 | | |
| Total | 154 | 114 | 40 | 25.9 |

* Of the total number of blood relatives of this group, 25.9 per cent had achlorhydria; 15.7 per cent of those below 40 years of age had achlorhydria; 42.3 per cent of those above 40 years of age had achlorhydria.

per cent of achlorhydria in husbands of the average age of 48 years is less than half that of 22.2 per cent in brothers of the average age of 46 years, Also, the incidence of 20 per cent in wives contrasts markedly with the incidence of 50 per cent in sisters of practically the same average age.

The fact that among the blood relatives the incidence of achlorhydria is less between the ages of 50 and 59 than between the ages of 40 and 49 may or may not be significant, but its significance is not now apparent. Possibly a larger series would indicate the gradual increase in incidence of achlorhydria with advancing age, such as is seen in the control group of patients. The cases in which the patients are aged 70 years and more are too few to permit of any conclusions.




Comparison of incidence of achlorhydria.

The average of 15.7 per cent of achlorhydria in all those blood relatives aged less than 40 years contrasts well with the average 42.3 per cent in those aged more than 40 years and shows that the general tendency to increase of achlorhydria with advancing years is present among these relatives.

## CONCLUSIONS

From these figures it seems to be strongly indicated that, when correction is made for age and sex, achlorhydria has a distinct tendency to occur more frequently among blood relatives of patients who have pernicious anemia than among normal persons or among persons who have a great variety of other diseases. This may mean that there is an inherited tendency to the occurrence of achlorhydria in many blood relatives of patients with pernicious anemia over and above any such tendency among patients having various other diseases, and even among those having gastro-intestinal symptoms. It seems unlikely, however, that the achlorhydria itself is inherited, but that the tendency to its development later may be an inherited factor. This is shown by the incidence of 15.7 per cent of achlorhydria among those relatives aged less than 40 years and by the incidence of 42.3 per cent aong those aged more than 40 years. If the achlorhydria, as such, is inherited directly, the incidence should differ little in the two age groups.

Although it cannot be stated that these results prove an hereditary aspect of pernicious anemia, they strongly suggest a familial tendency to the development of one of its most important features.

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## ABSTRACT OF DISCUSSION

DR. GARNETT CHENEY, San Francisco: Dr. Conner's conclusion that the incidence of achlorhydria is greater in the relatives of patients with pernicious anemia than in other groups of persons may prove more clear-cut than he has shown. Better methods of gastric analysis have shown that achlorhydria is not so common as previously described. In a recent group of 400 patients under investigation, between the ages of 11 and 76, who received an alcohol-phthalein test meal, the total percentage showing achlorhydria was only 12.7. In each age group the figures were lower than in the tables presented. Most of the patients without free hydrochloric acid received histamine and several of these then showed free acid, bringing the percentage of achlorhydria down to 10.4. All cases of pernicious anemia which show achlorhydria also show it to histamine. In other words, they are primary or true achlorhydrias. It is unfortunate that the group of relatives did not receive this test, for it seems likely they would have proved to have true achlorhydria. What I wish to point out is that true achlorhydria is far less common in larger groups of cases than is suggested by the reports, and is probably as common in the blood relative group of cases that Dr. Conner has studied. This would give a striking preponderance of true achlorhydrias in blood relatives of patients with pernicious anemia over the control series. It has always struck me that pernicious anemia was not particularly common in families, and in the few relatives which I have studied achlorhydria has not been encountered. For all the primary achlorhydrias which occur, few ever develop into primary anemia, which seems good evidence that there must be some other important factor concerned in the development of this disease. Most of these patients have a characteristic physiognomy and the gastric achylia may be an internal aspect of this same conformity of external appearance. It would be enlightening to study the blood relatives of patients with primary achlorhydria who do not have pernicious anemia to determine whether the high family incidence of achlorhydria goes with a predisposition to pernicious anemia alone, or with achylia of unknown cause. Gastric analysis should be established as routine for large clinics, just as are urinalysis, and blood and stool examinations. It is only in this manner that we may find answers to many of the questions about this interesting subject.

DR. H. J. DAVIDSON, Seattle: Having studied the occurrence of achlorhydria in the families of patients with primary pernicious anemia, naturally a question will arise concerning the fundamental problem of hydrochloric acid secretion. Where does it come from and how does it come? What is the chlorhydrogen, where is it found, how elaborated, and by what action does it become hydrochloric acid? For instance, it is extremely interesting to observe that hydrochloric acid is secreted in completely gastrectomized human beings. For instance, in patients whose stomach has been removed with the esophageal mucosa at the proximal end and the duodenal mucosa at the distal end, the lower end of the esophagus being connected with the jejunum below, hydrochloric acid will be secreted. Generally speaking, we have expected to find hydrochloric acid only in the stomach and particularly from the mucosa of the lower portion of the stomach. Since hydrochloric acid can be present in gastrectomized human beings and there can also be achlorhydria in many people in the condition under discussion and others who have otherwise normal stomachs so far as investigation can show, whence comes the hydrochloric acid? What is there in the body economy that just precedes the production and the pouring out of hydrochloric acid? That, to me, seems to be the ultimate problem to which this investigation leads.

DR. REGINALD FITZ, Boston: As I see pernicious anemia patients on liver and diabetic patients on insulin, I get the impression that they are alike in many ways. The patient with diabetes who is taking insulin gets along comfortably but

still continues to have diabetes. In the same fashion, the pernicious anemia patient on a liver diet gets along comfortably but still continues to have pernicious anemia. There seems to be no reason for thinking that the administration of insulin or liver will cure diabetes or pernicious anemia. Many people feel that the familial tendency to pernicious anemia is striking. Dr. Conner has shown that the tendency to achlorhydria is also striking in the relatives of patients with pernicious anemia and every one knows that achlorhydria is one of the common early signs of pernicious anemia. Does he advocate, as a means of preventing the development of pernicious anemia in a family of patients with pernicious anemia, the routine administration of liver or of hydrochloric acid? Does he feel that he has enough evidence even to imagine that the development of pernicious anemia can be prevented by treating the achlorhydric relatives of pernicious anemia patients for the disease before they have any clinical signs whatever of this illness? If any cases of pernicious anemia can be prevented as a result of Dr. Conner's observations, his work becomes of extraordinary importance. As it is, it is unquestionably interesting.

DR. H. MILTON CONNER, Rochester, Minn.: In the matter of getting the relatives' consent to a test meal, I have not encountered a great deal of resistance. The test meal has not been given to any relative without informing him of the importance of knowledge concerning his gastric acidity and of the fact that I was conducting a study. I purposely have not included in this series any studies in connection with histamine, although a few tests have been made on relatives. There is no large reported series of histamine tests among normal individuals or persons with various diseases with which to compare histamine tests in relatives. Therefore, I have omitted reference to histamine. In several instances, however, in which I have given the histamine test to relatives, I have found achlorhydria. In regard to Dr. Davidson's reference to achlorhydria as a cause of pernicious anemia: I think we are treading on uncertain ground when we talk of achlorhydria as a cause for pernicious anemia. Certainly the work of Minot and Murphy regarding the use of liver and liver extract has shown quite definitely that the liver and liver extract have a tendency to keep the patient relatively well as long as he continues to use them. However, their work has not explained the etiology of pernicious anemia, and there are still a great many who believe that achlorhydria is one of the most important causes of pernicious anemia. This question must be left open for further investigation. In answer to Dr. Fitz's question, in every instance in which we have found achlorhydria in the relative we have advised him to take hydrochloric acid the rest of his life, prescribing 1 drachm (4 cc.) of dilute hydrochloric acid three times a day. If achlorhydria is one of the important causes of pernicious anemia, it may be that in certain cases we shall prevent the development of pernicious anemia by the administration of hydrochloric acid, although we may not be able by the administration of it to do for the patient what he could do for himself if he secreted the hydrochloric acid into his own stomach from materials obtained from his own blood. In other words, we may, by administering hydrochloric acid, upset the chemical equilibrium of the blood in a way that makes our administration of hydrochloric acid not as efficient as we would like.

**Peripatetic Professors.**—For many years there was in this country a group of peripatetic teachers who, like the Sophists of Greece, went from town to town, staying a year or two in each, or they divided their time between a winter session in a large city school and a summer term in a small country one. Among them Daniel Drake takes the precedence, as he made eleven moves in the course of his stirring and eventful life. Bartlett comes an easy second, having taught in nine schools. Dunglison, T. R. Beck, Willard Parker, Alonzo Clark, the elder Gross, Austin Flint, Frank H. Hamilton, and many others whom I could name, belonged to this group of wandering professors. The medical education of the day was almost exclusively theoretical; the teachers lectured for a short four months' session, there was a little dissection, a few major operations were witnessed, the fees were paid, examinations were held—and all was over.—Cushing, Harvey: Sir William Osler, Oxford University Press, page 511.

# GAS GANGRENE OF THE EXTREMITIES

## WITH ESPECIAL REFERENCE TO TRIVALENT ANAEROBIC SEROTHERAPY *

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Gas gangrene, or "acute putrefaction of tissues in vivo," was, until the World War, a clinical curiosity. During the beginning of the war, by nature of the type of explosives, trench warfare, and heavily manured soils, there was a frightful incidence of anaerobic wound infections with a high mortality. Research work was stimulated in order to find means of combating this serious complication. Much progress was made in methods of detection, observation and treatment of these infections. Radical surgery, supplemented by the use of serums, was finally found to be the most satisfactory method of treatment. Since the war, it has been recognized that anaerobic infections are quite widely distributed in civil practice, but it seems evident that the lessons learned during the war have been forgotten, for such radical measures as unwarranted amputations are still being practiced. The object of this paper is to emphasize the importance of serotherapy in conjunction with the surgical and antiseptic procedures in the treatment of gas gangrene of the extremities as exemplified in a series of seven patients recently treated by us.

In 1853, Maisonneuve first gave an academic clinical description of gas gangrene.[1] Eleven years later, Pirogoff described the same process as "acute gangrenous edema." From 1871 to 1880 Bottini, Pasteur, Koch and Gaffky investigated the subject, and Pasteur finally reported the causative organism as *Vibrion septique*. Koch and Gaffky called this same organism the bacillus of malignant edema. Welch and Nuttall in 1892 isolated a bacillus known to us as *Bacillus welchii* or *Bacillus aerogenes-capsulatus*, now more scientifically termed *B. perfringens* (Veillon). During the war, Weinberg and Seguin[2] isolated *Bacillus oedematiens*. At the present time the recognized gas-forming group of organisms consists of about twenty-five anaerobes and from ten to fifteen aerobes, and are included in the list of bacteria constituting the intestinal flora of herbivorous animals and some human beings. These bacteria therefore have a wide distribution, being present in soils as well as being a contamination of animal products such as hair, hides and wool, especially clothing, as demonstrated by Gage[3] and by Pilcher.[4] Soil was the contaminating agent in all of the wounds reported in this paper.

### BACTERIOLOGY

The organisms usually concerned in gas bacillus infections are as follows:

1. *B. perfringens* (*B. welchii, B. aerogenes-capsulatus*) is the greatest producer of gas and is most often

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1. Frazier: Keen's Surgery, Philadelphia, W. B. Saunders Company **1**: 526-529, 1910.
2. Weinberg, M., and Seguin, P.: Formes pseudo-graves d'infections gazeuses, Compt. rend. Soc. de biol. **79**: 116-119, 1916.
3. Gage, I. M.: Gas Bacillus Infection: Report of Four Cases, Am. J. Surg. **1**: 177 (Oct.) 1926.
4. Pilcher, J. T.: Gas Gangrene, with Special Reference to Its Treatment, Ann. Surg. **81**: 198 (Jan.) 1925.

isolated in gas gangrene. It may be found alone but is usually associated with other organisms. Aerobic saprophytes seem to incite greater pathogenicity. When a culture of *B. perfringens* is injected into the hip muscles of a rabbit, a gas phlegmon results in a few hours. The skin is raised and crepitation can be felt. A reddish serous discharge is produced with bubbles that have a putrid odor. The infected portions of the muscles are of a dirty gray. It attacks muscles with avidity, as a result, as some have suggested, of the glycogen. Death follows in from eight to twelve hours. Vincent [5] found this organism in 82 per cent of gas gangrene infections during the war.

2. *Vibrion septique* is a rather rare, slender, motile, sporing organism which also produces a classic form of gas gangrene. It produces less gas but causes more edema and therefore predominates in edematous lesions. Some bacteriologists feel that its pathogenicity is anything but feeble. The clinical manifestations of this infection begin several days later than *B. perfringens* and seem to be more superficial. A fairly well defined line of demarcation is seen following the course of the lymphatics and blood vessels. Gemmill [6] says that the condition cannot be cured by surgery and that the mortality is 100 per cent. This organism is found in 10 per cent of gas gangrene infections, according to Vincent.

3. *B. oedematiens* is polymorphic and may resemble *Vibrion septique, B. sporogenes* and *B. tetani*. Its toxin produces a special white edema which more or less completely masks the gas infiltration. Vincent and Stodel [7] state that this organism is found in from 4 to 5 per cent of cases of gas gangrene.

4. *B. sporogenes* is a common anaerobic associate with the same morphologic characteristic as *Vibrion septique*, but is considered nonpathogenic. It is motile and is responsible for the putrid character of the wound.

Since these organisms are widely distributed, the question naturally arises as to why one does not see more of these infections. The answer is probably found in the experiments of Teissier,[8] who demonstrated that gas-forming organisms in themselves have little power to attack the tissues but, when associated with other organisms, they rapidly produce the typical disease. Inoculation with either *B. perfringens* or *B. oedematiens* produces a hard edema which slowly disappears. When growths of "aerobic" bacteria are added to these cultures, a severe infection results and the laboratory animal dies in from fifteen to seventy-two hours. Vincent and Stodel [7] have demonstrated that, if one injects separately into two guinea-pigs attenuated *B. perfringens* and the *Vibrion septique*, neither alone will produce the gangrene. But if one injects the mixture of either of these with *B. sporogenes*, a typical gas gangrene will be produced. Furthermore, Weinberg [9] has been able to isolate two varieties of gas gangrene bacilli, viz., the saccharolytic, to which belong *B. perfringens* and *B. fallax*, and the proteolytic, among which are *B. sporogenes* and *B. histolyticus*. The latter appear to thrive only after one of the saccharolytic type has destroyed the muscle tissue and prepared it for invasion. The proteolytic organisms are responsible for the odor so characteristic of gas gangrene.

5. Vincent, H.: Prophylaxis and Treatment of Gaseous Gangrene by Specific Serotherapy, Internat. Clinics **4**: 138 (Dec.) 1925.

6. Gemmill, W. F.: Emphysematous Gangrene with Report of Cases, Surg. Gynec. Obst. **38**: 650 (May) 1924.

7. Vincent, H., and Stodel, S.: Preventive and Curative Serum in Gas Gangrene, Compt. rend. Acad. d. sc. **167**: 137, 1918; **168**: 188, 1919.

8. Teissier, P.; Rivalier, E., and Thurel, R.: Extremely Acute Puerperal Septicemia from Bacillus Perfringens, Bull. et mém. Soc. méd. d. hôp. de Paris **50**: 596 (April 16) 1926.

9. Weinberg: Sur la bactériologie de la gangrène gaseuze, Compt. rend. Soc. de biol. **78**: 286-288, 1915.

## PATHOLOGY

McNee and Dunn [10] have described the microscopic changes attendant on the spread of the infection in the muscle. There is first a separation of the muscle fiber from the surrounding interstitial tissue, with a clear space between the fibers. Later the sarcolemma disappears and finally the muscle fibers disintegrate and become gelatinous. No bacteria are seen in the invading clear zone, but later they are found scattered throughout the dead muscle fibers. The invasion progresses longitudinally, not transversely, from one muscle to another. The fascia of the individual muscles serves as a limiting membrane.

The affected muscle becomes opaque, brick red and bloodless, and loses its contractility. Bubbles of gas appear. The color soon changes to a green or brown, and then to black. Finally, gas can be felt in the tissues.

Bull and Pritchett [11] have demonstrated the presence of two toxins: one a hemolysin causing blood destruction and the other a toxin acting locally in the tissues and blood vessels causing edema and necrosis. These toxins, augmented by the by-products of autolysis, are the basis for the systemic reaction.

## DIAGNOSIS

The characteristics and habitat of these organisms being known, it seems important to stress the necessity of obtaining first a clear history of the injury. Open, crushing wounds, lacerations, injuries resulting from explosive violence and compound fractures occurring in such a manner that earth and materials, especially woolen cloth, have contaminated them, must inspire a fear of anaerobic infection. Especially is this true if there are signs of injury to the blood supply of the wounded area.

In our cases there was lack of uniformity in the symptoms and hence variations from the textbook picture. A definite diagnosis was not made on any patient until the lapse of at least twelve hours except in case 2, in which the suspicion of an anaerobic inoculation was in mind because the history of the injury was similar to a recent severe wound with gas bacillus infection.

Tenopyr [12] calls attention to two suggestive symptoms that appear early—first, pain disproportionate to the amount of injury, and, second, the acuteness of intellect displayed by the patient. In cases 1, 3 and 4 these symptoms were manifest within twelve hours. Smears of the secretion and cultures made the diagnosis certain and called for immediate and adequate treatment.

Locally there is disproportionate swelling, with pallor of the surrounding skin. The edges of the wound are of a dirty creamy tint and the dressings are stained with a red-tinged serum. There is no pus. Later, bubbles of gas can be seen or can be milked out of the wound, and crepitation under the skin is felt. After twenty-four hours there is a dirty greenish-gray membrane over the area, the odor is characteristic, and there is usually a thin discharge.

10. McNee, J. W., and Dunn, J. S.: The Method of Spread of Gas Gangrene into Living Muscle, Brit. M. J. **1**: 727 (June 2) 1917.

11. Bull, C. G., and Pritchett, I. W.: Toxin and Antitoxin and Protective Inoculation Against Bacillus Welchii, J. Exper. Med. **26**: 119-138 (July) 1917.

12. Tenopyr, J.: Treatment of Aerogenes Capsulatus (or Gas Bacillus) Infection in Civil Life, New York State J. Med. **27**: 16 (Jan. 1) 1927.

The constitutional signs of infection as displayed by cases 1, 3 and 4 were increased pulse rate, high fever, flushing of the face and unimpaired intellect of the patient. These signs manifest themselves much earlier than in the cases of pyogenic infections and should therefore lead to an immediate careful study of the wound.

Tenopyr recommends a simple procedure for the early detection of the presence of anaerobes. He places a portion of the macerated tissue into a sterile test tube and covers it with melted agar. If anaerobes are present, gas bubbles will be seen after a few hours of incubation.

A roentgenogram may show bubbles in the tissues before crepitation is felt. Ritzman [13] recommends that a roentgenogram be taken every six to eight hours for the first three or four days (case 3).

A consideration of the symptoms and pathologic conditions as just outlined makes it evident that the diagnosis of an anaerobic infection is usually a simple matter, provided one is on the alert.

### TREATMENT

Appropriate and energetic treatment applied at the earliest sign of the infection may render the control a simple procedure, whereas, if treatment is instituted after late signs are present, it may be difficult or impossible to obtain satisfactory results.

Rigid rules for the treatment of these wounds are just as difficult to make as are those for any other type of surgery. Each case must be considered as an entity. There are three important procedures to bear in mind: débridement, irrigation and serotherapy.

Experience has established beyond question that all grossly infected contused wounds should have an early and thorough débridement, with care to remove all foreign material, and devitalized tissue. If the history of the injury indicates a possible anaerobic invasion and there is exposed contaminated muscle, removal of enough surrounding tissue, especially injured muscle, to insure a healthful base and a good blood supply with adequate drainage, is essential. Healthy muscle, evidenced by bleeding, contractility and color, should mark the limits of the resection.

When the wound is seen late, or when it has been inadequately treated, prompt and bold eradication of all involved areas, disregarding the preservation of anatomic structure, is imperative. The question of amputation may be pertinent, especially if the larger blood vessels are injured so that there is interference with the blood supply of a large area of the extremity. In such a case poor surgical judgment or a lack of information regarding the characteristic progress of the infection may result in unnecessary amputations. On the other hand, failure to amputate may result in the loss of life. After débridement and free incision, the wound should be left open for drainage and exposure to the air. Packing of the wound may interfere with drainage and aeration.

Irrigation is the next important consideration. Hydrogen dioxide is used by many, permanganate solutions by others. Pilcher [4] recommends a solution containing among other things quinine sulphate and formaldehyde, while others select freshly prepared 1 per cent chloramine. In all of our cases the latter solution was used, the wound being flushed every three hours following Dakin's technic. In addition, the wounds were immersed in the same solution for one hour periods three or four times a day. The mechanical cleansing as well as the proteolytic character of this disinfectant seems to sterilize the entire wound without any deleterious effect on the tissues.

Fig. 1 (case 1).—Swollen hand and black thumb, with extensive gangrene. Amputation of the thumb and wide exposure of the wound were necessary.

Serotherapy, which we now consider to be a most important factor in the control of gas gangrene, was employed in the treatment of our first and most severe anaerobic infection. In this case amputation was recommended because it seemed imperative in order to save the patient's life. The hand was severely traumatized and the anaerobic infection seemed vicious. The patient repeatedly refused amputation and we were forced to treat the wound surgically and to rely on energetic serotherapy. Accordingly serum was used, the components of which were anti-*B. perfringens*, anti-*Vibrion septique* and anti-*B. oedematiens*. It was given both intravenously and locally into the deep tissues above the wound. The results were so gratifying that the succeeding six patients were boldly treated in a similar manner with a satisfactory control of the infection obtained in each instance. One death occurred (case 3) eighteen days following the injury, after the anaerobic infection seemed under perfect control. This patient demanded an amputation since he felt that the extent of the injury would make his arm useless. Amputation was thought safe and was done, but the patient died of a hemolytic streptococcic septicemia seven days later. The wound contained *B. perfringens*, but the stump by culture was free from the infection.

General measures, such as blood transfusions, may become necessary because of hemorrhage or because of blood-destroying toxins present during the active stage of the infection. Blood analysis made at frequent intervals will indicate when this is necessary. In none of our cases did we have to resort to this procedure.

13. Ritzman, A. Z.: X-Ray Diagnosis in Gas Gangrene, Atlantic M. J. **26**: 676 (July) 1923.

After reviewing the literature we have often asked what has happened to serotherapy, which promised so much at the close of the war in these cases? Has it been forgotten or are we failing to report our results?

The serum produced by Weinberg and Seguin,[14] consisting of anti-*B. perfringens*, anti-*Vibrion septique* and anti-*B. oedematiens*, and the polyvalent serum of Laclainche and Vallée [15] used according to the method of Sacquépée and DeLavergne [16] produced excellent results. Duval and Vaucher [17] reported that the use of the serum of Weinberg and Seguin reduced the average mortality from 16 to 3.15 per cent.

The serum used by us is one prepared by immunizing horses against the toxins of the Welch bacillus, *Vibrion septique* and *Bacillus oedematiens*. To this has been added sufficient tetanus antitoxin to bring the content of 100 cc. up to between 5,000 and 10,000 units. One hundred cubic centimeters contains about 70 units of Welch antitoxin. *Vibrion septique* and *B. oedematiens* antitoxin are standardized by determining the number of minimal lethal doses the antitoxin will neutralize. They contain enough *Vibrion septique* antitoxin to neutralize practically 62,000 minimal lethal doses of *Vibrion septique* toxin and will neutralize about 130,000 minimal lethal doses of *B. oedematiens* toxin. The difference in antitoxic content for Welch toxin and for the other toxins is not as great as these figures would appear to show, since the Welch antitoxic unitage is much greater than the unitage for the other antitoxins.

In giving this serum there are no hard and fast rules, because the type of injury, severity of the infection and tolerance of the patient must govern the amount and number of times that it should be used. We have felt that it should be given both intravenously and locally. The intravenous injections have never exceeded 50 cc. in 100 cc. of physiologic solution of sodium chloride each twenty-four hours. When the serum was applied locally we used 50 cc. daily and concluded that injections directly into the wound would possibly give the organisms a wider distribution mechanically, and therefore the injections were made both superficially and deep into all the presumably normal tissues some distance above the infected area. No patient received more than a total of 1,000 cc. of the serum.

Fig. 2 (case 1).—Wound healed and a good functioning hand.

## SUMMARY

1. Anaerobic bacteria are widely distributed and anaerobic wound infections occur frequently in civil practice.

2. The most important of these organisms are *B. perfringens, Vibrion septique* and *B. oedematiens.*

3. Suspicion of their presence in all contaminated wounds should be entertained.

4. Early diagnosis is imperative to prevent destruction of extremities or even life itself.

5. The cardinal points in the treatment are: (*a*) early débridement, with care to remove all foreign bodies; (*b*) irrigations and immersion of wounds with antiseptics, and (*c*) anaerobic serum (trivalent) locally and intravenously.

6. In seven cases the anaerobes were controlled in every instance. Only one amputation was done. This patient died of hemolytic streptococcic septicemia.

## REPORT OF CASES

CASE 1.—T. A., a white man, aged 37, admitted April 27, 1927, four hours previously had caught his left hand between the sprocket wheel and chain of a tractor while plowing a muddy fertilized field. First aid was given by a physician, and the patient was brought to the Woodland Clinic Hospital where, three hours after the injury, we found a badly lacerated hand with tendons, muscles and fragments of the third, fourth and fifth metacarpals exposed. There was moderate swelling but little bleeding. The wound was cleansed and antiseptic dressings were applied. Antitetanic serum was given. The pulse rate was 72; the temperature, 98.2 F. (fig. 1).

Twelve hours later there was much pain and the hand was swollen, with very little discharge. The characteristic odor of gas gangrene was present. The temperature was 101 and the pulse rate 110. Immediate smear demonstrated *B. perfringens.* Amputation was urgently advised but refused. Thorough débridement with approximation of the fragments was done. Dakin's tubes were inserted into the wound in all directions and fresh 1 per cent chloramine irrigations were given every two hours. The hand was immersed in the same solution for periods of one hour, three times daily. Fifty cubic centimeters of trivalent anaerobic serum was given intravenously and 50 cc. intramuscularly circling the forearm (fig. 2).

On the second day the hand was more swollen, with redness to the elbow. The temperature was 102; the pulse rate, 100. Amputation was again refused. The trivalent serum was repeated in the same manner as the day before, with irrigations and immersions.

On the third day the forearm was red and greatly swollen, and the thumb was black. The temperature was 102 and the pulse rate 94. Amputation was again refused. The thumb was removed and several incisions were made into the forearm and Dakin's tubes were inserted, for more extensive irrigations. The prognosis seemed questionable. The trivalent serum was again given in the same manner as on the preceding days.

On the fourth day the swelling of the hand and forearm had receded. The temperature was 100, with a pulse rate of 84. Serum treatment was again given. There was gradual improvement, both locally and generally. *B. perfringens* was still present in the wound on the thirteenth day. On the seventeenth day the serotherapy was again repeated, with slight anaphylactic reaction, and on this day *B. perfringens* was still present in the wound. Improvement seemed to warrant the removal of the Dakin tubes on the twenty-second day. The wound gradually healed with the loss of portions of the tendons. The fragments united, and eight weeks after the injury the patient had a healed wound and was able to work with his hand.

14. Weinberg and Seguin: Notes bactériologiques sur les infections gazeuses, Compt. rend. Soc. de biol. **68**: 274-279, 1915.
15. Haniquet, Maurice: Le serum de Laclainche et Vallée dans le traitement des gangrènes gazeuses états infectieux, Paris thesis, 1914-1920.
16. Sacquépée, E., and DeLavergne, P.: Presse méd. **27**: 85 (Feb. 20) 1919.
17. Duval, Pierre; and Vaucher, E.: Essai de serotherapie préventive antigangreneuse, Bull. et mém. de Soc. de chir. de Paris, 1918.

Here we were dealing with a very severe case of gas gangrene. It looked hopeless and amputation seemed imperative. Had this patient submitted to amputation it seems likely that patients 3, 4 and 5 would have received the same advice and perhaps amputation. The mere fact that we were able to obtain this result gave us the incentive to acquaint ourselves with the literature on this subject and also to exert a greater effort to control succeeding anaerobic infections without resorting to prompt amputation.

CASE 2.—B. F., a white man, aged 48, was admitted to the hospital, May 20, 1927, with a compound dislocation at the left ankle, caused by a fall from a tractor while plowing. The left tibia was protruding about 4 inches through a rent on the inner aspect of the ankle joint. The roentgenogram revealed a fracture of the fibula near the ankle. Under general anesthesia, the soiled wound was cleansed and a débridement

Fig. 3 (case 4).—Macerated right hand exposing the structures; oat kernels distributed throughout the wound; tourniquet applied.

of the lacerated tissues done. The dislocation was reduced and the wound closed. A splint was applied and antitetanic serum given.

On the third day, the ankle was greatly swollen. There was much pain and the characteristic odor of gas gangrene was detected. The temperature was 100 and the pulse rate 100. The wound was immediately opened and, since no muscles were involved, a minor débridement was done. Dakin's tubes were inserted into the joint and into the wound. Irrigations with 1 per cent chloramine every two hours were then instituted. Fifty cubic centimeters of trivalent serum was given intravenously and 50 cc. injected into the muscles above the ankle joint. On the following day this procedure was repeated. Culture showed *B. perfringens* and *Staphylococcus albus*. Progress seemed satisfactory from this time on and the patient was dismissed four months later with the wound entirely healed except for some stiffness in the ankle joint.

Within a period of one month after his dismissal from the hospital he was able to use the foot satisfactorily and has been working ever since.

This patient had an anaerobic infection without the serious involvement of any muscles. The infection was well localized and the wound was widely open. This permitted us to treat the wound with little surgery and a small amount of serum.

CASE 3.—G. B., a white man, aged 59, was admitted, July 2, 1927, with his right elbow crushed as the result of an automobile accident. The elbow struck a stone wall, resulting in the maceration of the tissue and fragmentation of the bony structures making up the joint. One hour later the wound was cleansed and the patient was given supportive treatment.

On the following day blood analysis showed: hemoglobin, 75 per cent; leukocytes, 13,400; polymorphonuclears, 81 per cent; lymphocytes, 14 per cent; mononuclears, 5 per cent. The urinalysis showed a specific gravity of 1.025, an acid reaction and a trace of albumin; there were occasional hyaline and granular casts, and occasional red blood cells and several pus cells in each high field. The roentgenograms revealed gas bubbles in the deeper structures and, on closer examination of the wound, there was the typical picture and the characteristic odor of gas gangrene. The temperature was 100 and the pulse rate 110. The patient refused amputation, and a wide débridement was done. The wound was left open and Dakin's tubes were inserted for flushings every two hours. Culture showed *B. perfringens* and *Staphyloccocus albus*.

Fifty cubic centimeters of trivalent anaerobic serum was given intravenously and 50 cc. intramuscularly above the wound every day for ten days. On the eleventh day, the patient demanded amputation. He reasoned that a functionless arm at his age could not recompense him for enduring so much pain. With a normal temperature and a pulse rate of 90 we felt safe to operate and accordingly a high guillotine amputation was done. A small abscess pocket was encountered during the operation. Cultures of the stump were negative for *B. perfringens*, but *Staphylococcus albus* was found. The wound at the elbow gave a positive culture for *B. perfringens*. In spite of transfusions and general measures the patient died on the eighteenth day, of hemolytic streptococcus septicemia.

This patient should have had immediate amputation following the injury. The measures employed apparently subdued the anaerobic infection. The aerobic contamination had spread to a much wider area than the wound, and operative procedures through these tissues very likely gave rise to the blood stream infection. We consider it an error of judgment to have allowed an amputation.

CASE 4.—H. H., a white man, aged 56, admitted, July 9, 1927, had caught his right hand in the grain cleaner, two hours before entry, while threshing. The auger had macerated the hand, exposing nearly all the structures. The wound was full of barley and oat grains. First aid had been given by the home physician, who removed most of the grain, cleansed the wound, applied dressings, applied a tourniquet just above the wrist, and sent him to the hospital for amputation.

Examination revealed a terribly macerated right hand. The thumb and forefinger were hanging by shreds. The palmar fascia, muscles, tendons, fragmented metacarpals and kernels of grain filled the wound. There was much bleeding, and it looked utterly hopeless to save the hand.

The wound was irrigated with ether, alcohol and iodine. The grain kernels were removed, as were the useless thumb and forefinger. Suspecting the possibility of anaerobic contamination, we injected 100 cc. of trivalent anaerobic serum in all directions in the wound and circularly into the tissues about the wrist as prophylaxis. Antitetanic serum was given, and the wound was covered with loose dressings.

On the next day there was the characteristic odor and appearance of gas gangrene. The temperature was 100.4 and the pulse rate 100. Culture showed *B. perfringens*. Chloramine irrigations every two hours, with immersion of the hand in the same solution three times a day for periods of two hours, were instituted; 50 cc. of trivalent anaerobic serum was given intravenously and 50 cc. intramuscularly and circularly into the forearm each day for five days. The temperature varied

between 100 and 102, with a pulse rate between 80 and 100 during this time. Two months later he was discharged with a healed wound and with a well functioning hand.

This patient presented what appeared to be a hopeless maceration of his right hand, with an anaerobic infection. The attempt to save the hand by conservative measures was prompted solely by our experience with patient 1. This patient was the only one in our series who received prophylactic serum. It must be remembered that there is little muscle pabulum for growth in hand macerations and this may account for the good result obtained.

CASE 5.—E. M., a white youth, aged 19, was admitted to the hospital, Nov. 12, 1927, following an automobile collision. A compound fracture of the right tibia, with the proximal fragment protruding through the skin for about 3 inches, was found. The wound was cleansed, simple reduction made, antitetanic serum given, and the leg dressed in splints.

On the following day, with a temperature of 101 and a pulse rate of 90, a débridement and more careful replacement of the fragments was done. The suggestive odor of gas gangrene was present. A smear showed the presence of *B. perfringens*. A much wider débridement was done and Dakin's tubes were inserted. Twenty-five cubic centimeters of triple anaerobic serum was given intravenously, with a slight reaction.

During each of the next six days, with the temperature varying between 100 and 103 and with a pulse rate between 90 and 110, 25 cc. of trivalent anaerobic serum was given intravenously and 25 cc. intramuscularly above the injury. A severe urticaria and serum sickness were evident on the sixth day. No more serum was given since the infection seemed under control and the wound was granulating.

*B. perfringens* was still present on the eleventh day. On the seventeenth day the infection seemed quite well controlled and the Dakin tubes were removed.

Ten weeks after the accident, some dead bone due to osteomyelitis and sequestration was removed from the wound. The patient was dismissed eight days following this operation. Osteomyelitis was present for the next eight months, and removal of sequestrums, with curettage and skin grafting, was done several times. One year following the injury he had a perfectly healed and functioning leg.

Despite the fact that this patient could not tolerate much serum, the infection was well controlled. This demonstrates a case of compound fracture with severe anaerobic infection cured without amputation. We feel that the serotherapy contributed largely to the success of the management of this case.

CASE 6.—L. J., a white girl, aged 9 years, was admitted, April 26, 1928, two days after an automobile accident in which the left forearm had been crushed and denuded of skin from the elbow to the wrist. Another physician had administered antitetanic serum and replaced the shreds of skin as well as possible.

Twenty-four hours later he recommended amputation because of anaerobic infection. The skin flaps were black. The arm was swollen and there was the characteristic odor of gas gangrene. No muscles were exposed. Blood analysis showed: hemoglobin, 44 per cent; red blood cells, 2,460,000; white blood cells, 8,200; polymorphonuclears, 74 per cent; small lymphocytes, 17 per cent. The temperature was 101 and the pulse rate 140. Culture of the secretion from the wound demonstrated *B. perfringens*; secondary organisms were *B. coli, Streptococcus gamma* and *Staphylococcus aureus.*

All the skin flaps were removed and débridement was done. Fifty cubic centimeters of anaerobic serum was given intravenously. Since clinically there was not much local reaction to the infection, it was decided not to give any more serum. Skin grafting operations were done on several occasions and the patient was discharged, healed, one month after the injury.

This patient had very little serum and might have made as good a recovery without its administration. The muscles were not badly macerated and the organisms therefore did not have a good medium for growth.

CASE 7.—F. M., a white man, aged 34, was admitted to the hospital, Dec. 9, 1928, because one week previously, as the result of a fall, he had suffered a compound fracture of the right thumb. His family physician cleansed the wound, reduced the fracture and closed the wound with sutures. On the second day the thumb was black and painful. On the following day, his physician found a thin bloody discharge with bubbles of gas in the wound. The wound was immediately opened, irrigated and dressed. This was repeated daily for one week. On the seventh day the physician realized that he was dealing with gas gangrene and advised immediate amputation.

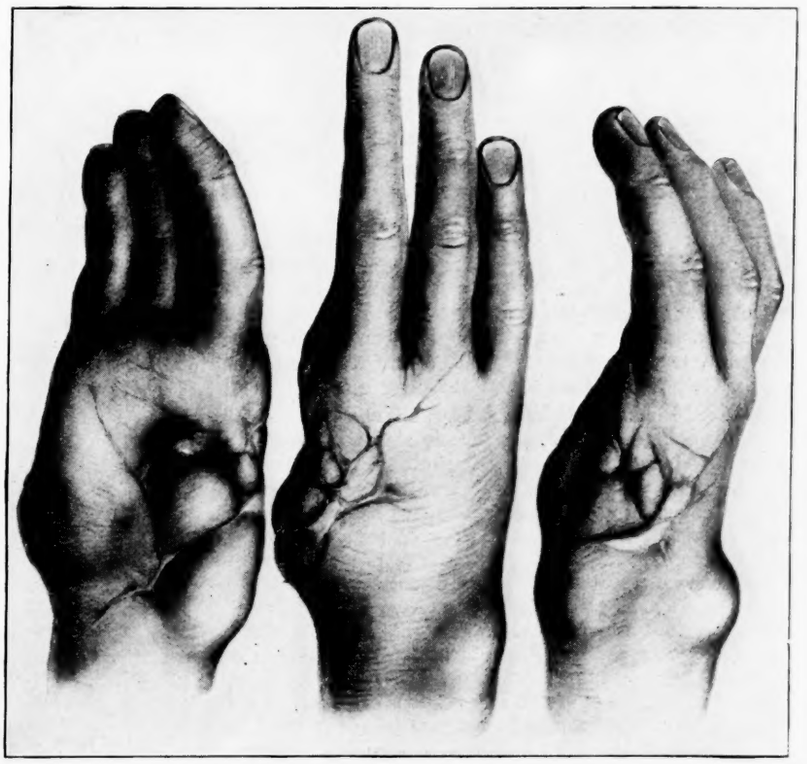

**Fig. 4 (case 4).—Wound completely healed with 90 per cent function of hand.**

Examination revealed a black and swollen thumb, with typical odor of gas gangrene. The temperature was 101 and the pulse rate 90. The hemoglobin was 86 per cent; leukocytes, 10,460, with a polymorphonuclear differential of 86 per cent. Immediate amputation of the thumb was done and Dakin's tubes were inserted for chloramine irrigations; 50 cc. of trivalent anaerobic serum was given intravenously and 50 cc. injected into the tissues of the forearm. This serotherapy was repeated the next day. Report of the culture showed *B. perfringens, Vibrion septique, B. coli* and streptococci.

On the fourteenth day, a severe hemorrhage ensued and it was necessary to ligate the radial artery. On the nineteenth day the patient was dismissed with the wound nearly healed. He soon made a complete recovery and has been well ever since.

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## ABSTRACT OF DISCUSSION

DR. H. H. SEARLS, San Francisco: We have had at the University of California Hospital several of these cases in the last few years. All of these have been under the direction of Dr. Karl Meyer. He has some rather fixed ideas on the bacteriology of gas gangrene. He thinks that practically all cases show evidence of *Vibrion septique* in the wounds. He thinks that the bacillus of Welch is often present only in more or less the same relation that colon bacillus is present in typhoid. He has not been able to prove this completely, but he has taken cultures in instances in which only the Welch bacillus has been found in other laboratories and he has been able to find *Vibrion septique* in them. Practically all of these organisms are spore-bearers. They give off a severe exotoxin. In our treatment we feel that we must combat this exotoxin and the best way to do it is with an antitoxin intravenously. We do not use the antitoxin serum locally. We feel that that is apt to endanger or further injure muscle and cut down its resistance. We give this intravenously, generally in dextrose. If the organisms have progressed so far that amputation is necessary, it is suggested that the amputation be so performed as to avoid exposing fresh muscle. In other words, one should cut through where there are tendons and cut through the joint surface itself, not trying to get a good working stump at first but simply checking the disease. If the organism is limited to one muscle bundle, as it often is, or to one muscle or one group of muscles, it is sometimes possible to keep it localized there by complete removal of that group alone. As to the isolation of these patients, we had a patient whose leg we amputated for gas gangrene. The next day there was gas gangrene in a patient in another ward as a result of rather careless handling of a hypodermic needle. The hypodermic needle was simply placed in alcohol as is the usual technic. These organisms are spore-bearing and one must sterilize these instruments and sterilize the linen thoroughly, bearing in mind the spore-bearing character of the organisms.

DR. E. E. LARSON, Woodland, Calif.: The use of serum in the treatment of gas gangrene is a live subject in Europe, especially Germany and France, where investigations are being carried on, the results of which will eventually be of much value. In giving the serum locally, we felt much the same as Dr. Searls, but careful aseptic administration well above the active process did not in any instance produce reinfection or seem to scatter the infection by trauma. Why there are not more of these infections occurring after rectal surgery is not definitely understood. There have been deaths due to gas gangrene following rectal operations as evidenced by the literature and by personal communications. By the use of polyvalent anaerobic serum in these cases it appears that we have a valuable agent that should be constantly kept in mind. I know of no patients with this unfortunate complication treated with serum. Theoretically it has seemed to us that if the serum was given into an artery supplying the wound, the serum might be more efficacious. This will be tried by us in the future.

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**Two Views of Normality.**—The various views regarding normality may be classified under two main headings, namely, normative conceptions and statistical conceptions. According to the normative view the normal is regarded as the ideal function or the best possible adaptation. This is a view frequently held by physicians, but it is not an accurate or workable view for it contains a subjective factor, namely, opinions or ideals which differ from person to person. Thus it would be impossible to give a definition of "best possible adaptation" that would be generally accepted. According to the statistical view the normal is merely the central tendency of a group or what is usually called the average. This is an objective and quantitative conception. From this point of view the normal can be definitely determined in the case of all measurable traits or functions, and in the case of nonmeasurable traits it can be determined in principle if not in fact. The statistical view is therefore the one most commonly adopted for scientific purposes. It is consequently extremely important to get a clear idea of the meaning and the implications of this view.—Bridges, J. W.: Psychology—Normal and Abnormal, New York, D. Appleton & Co., 1930.

# ACUTE HEMATOGENOUS (METASTATIC) PERINEPHRIC ABSCESSES*

HAROLD BRUNN, M.D.
AND
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We have confined our discussion of perinephric abscesses in this paper to those of hematogenous origin. In these cases there is usually an antecedent history of skin infection. The disease comes on suddenly in an otherwise perfectly healthy individual, in whom generally there has not been previous disease of the kidney or surrounding organs.

We have used the term "acute hematogenous perinephric abscess" because of the close similarity between this disease and acute hematogenous osteomyelitis. We have for years noted the similarity of these two apparently widely dissimilar diseases. They both follow

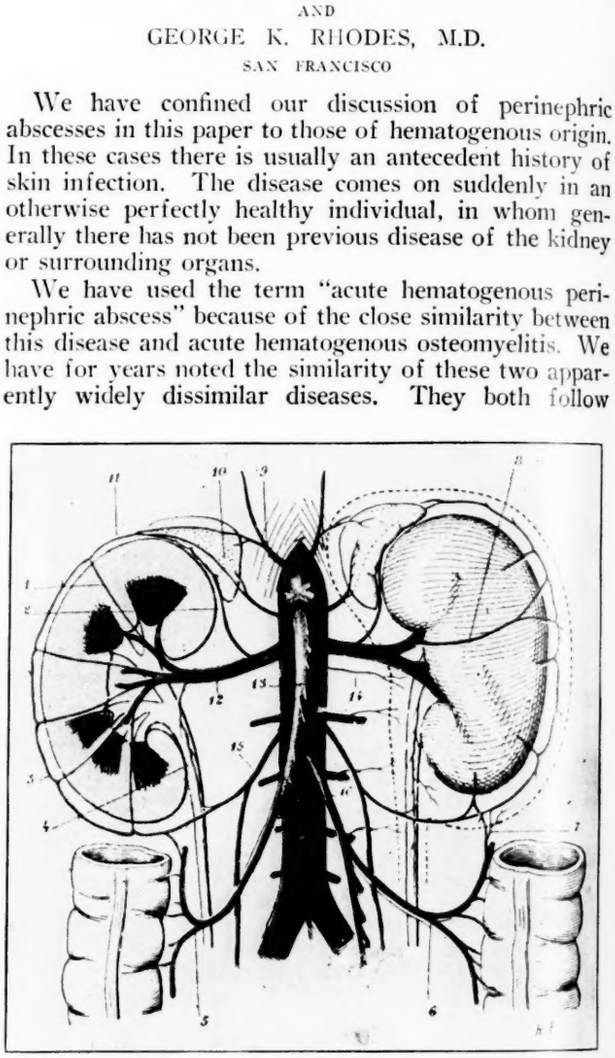

Fig. 1.—Arterial supply to the region of the fatty capsule (from Chirurgie du rein, by Papin): 1. Perforating branches from intercolumnar artery; 2, inferior capsular artery; 3, branch from spermatic; 4, ureteral artery; 5 and 6, right and left colic arteries; 7, capsular branches from colic; 8, branches from capsular artery; 9, diaphragmatic branches; 10, suprarenal branches; 11, branches from capsular artery; 12, renal artery; 13, superior mesenteric artery; 14, lumbar artery; 15, spermatic artery; 16, inferior mesenteric artery.

pyogenic skin infections. This infection may take the form of an eczema or some slight injury to the skin surface which has become [illegible] frequently the case, may follow [illegible] or carbuncles. These infections of the skin may be of slight moment, and unless a careful history is taken may easily be overlooked by the patient, especially as they frequently antedate the kidney or bone infection by several weeks or even months.

We have often asked ourselves why it is that these skin infections in children lodge in the marrow cavity and in adults in the perinephric region. It is note-

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* From the Department of Surgery, University of California Medical School.

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* This paper is abbreviated in THE JOURNAL by the omission of a table. The complete article appears in the Transactions of the Section and in the authors' reprints.

worthy that children seldom have perinephric abscesses of metastatic origin and that adults almost never suffer from an acute hematogenous osteomyelitis. It is interesting to speculate for a moment on the reasons for these clinical observations. It is well known that infections of the skin are often overlooked and neglected; they are exposed to trauma and movement and also to squeezing and manipulations by the patient or physician. As a result of this, showers of bacteria are frequently sent into the blood stream from time to time or phagocytes circulate in the blood current carrying living bacteria. In the child these bacteria are carried, apparently by preference, to the vascular bone marrow, which at this age is undergoing great metabolic activity, and here also there are end arteries in the metaphysis similar to those found in the kidney. On the other hand, the perinephric fat in childhood is developed very poorly, if at all; so the same conditions do not hold as in the adult.

The question as to why infections of the skin in the adult affect the perinephric fat must be answered. Several plausible explanations may be given. A careful study of the arteries supplying the renal cortex and the fatty capsule has shown them to be typical end arteries. The perinephric fat is rather poorly supplied (fig. 1) by numerous small end arteries arising as follows: (*a*) Certain of the intercolumnar arteries of the renal cortex penetrate the fibrous capsule and terminate in the fatty capsule. (*b*) There is usually a separate and distinct artery arising from the renal artery which supplies the fatty capsule (figs. 1 and 2). (*c*) There are also smaller inconstant branches given

Fig. 2.—Lymphatics of the kidney (Bardeleben), showing free anastomosis of lymphatics of this region and the intimate relationship of the main trunks with the psoas muscles.

off from the spermatic, suprarenal and mesenteric arteries.

It is quite evident that this network of end arteries is capable of holding up clumps of bacteria, and these in turn set up local foci of inflammation. The numerical law of averages dictates that the bulk of these infected emboli will lodge in the renal cortex. This is where they should go, to be taken care of by immunizing properties of the kidney epithelium. There will, however, be an occasional primary implantation by way of small arteries which terminate in the fatty capsule. In the former instance the result is the potential renal carbuncle or cortical abscess, while in the latter event a perinephric abscess may develop. Indeed, the evident etiology and clinical pictures of those abscesses arising in the perirenal fat and the renal cortex are remarkably similar. It has also often been

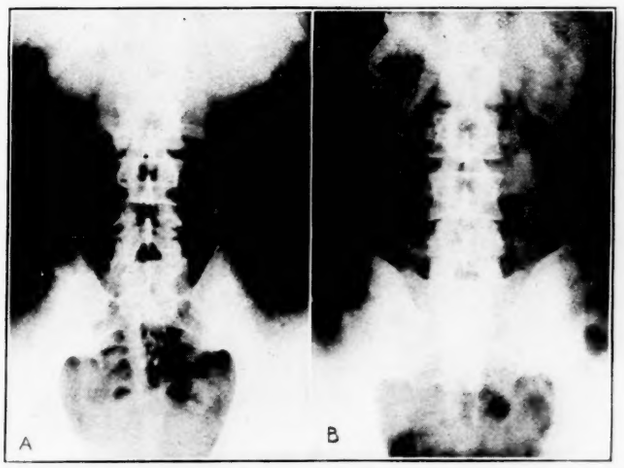


Fig. 3 (case 27).—*A*, appearance, April 15, 1929, showing slight blurring of the lower portion of right psoas; *B*, appearance, April 17, forty-eight hours later, showing obliteration of right psoas in its entirety and loss of kidney shadow on same side.

proved that cortical inflammatory lesions extend to the periphery and frequently rupture into the fatty capsule, thus forming a secondary perinephric abscess. It is therefore often difficult to differentiate clinically these two pathologic states, but fortunately a similar exploratory incision is indicated in each instance.

In considering further the possible rôle of the lymphatics rather than the blood stream in initiating a perinephric abscess, it may be recalled that there is a free intercommunication of lymphatics through the fibrous capsule of the kidney. Accordingly there are possibly instances in which organisms may be transmitted from the cortical lesion to the fatty capsule by way of the lymphatics. Thus almost simultaneously two abscesses may develop, the one in the cortex through blocking of the arteries and a secondary one in the perirenal fat carried from the primary abscess by way of the lymphatics. A direct rupture of a cortical abscess is probably, however, the more usual sequence. Cases have been reported of perinephric abscesses resulting from direct lymphatic extension of pelvic and genital infections.[1] Even in such cases, however, it would seem that a hematogenous source cannot be definitely ruled out.

We feel that perinephric abscess is rarely the result of bacterial invasion by way of the lymphatics. If the lymphatics were a potential factor in etiology, one would expect the condition far more frequently. Certainly the lymphatics of the perirenal fat do often communicate with lymphatic channels draining highly infected areas, such as appendical abscesses and postoperative bladder wounds. There are as well the

1. Jordan: Ueber renale und perirenale Abscesse nach Furunken oder sonstigen kleinen peripheren Eiterherden, Verhandl. d. deutsch, Gesellsch. f. Chir. **34**: 18, 1905. Jaffé, Max: Zur Chirurgie des metastatischen Murenabscesses, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **9**: 613, 1902. Horsley, J. S.: Perinephric Abscess Following Parturition, J. A. M. A. **50**: 763 (March 7) 1908.

numerous infections of the kidney, such as pyelitis and pyonephrosis, which would seem to lead directly to a perinephric abscess through lymphatic drainage, but on the contrary it is most rare for perinephric suppuration to occur in this manner.

One's interest is immediately aroused when the bacteriology of perinephric abscesses of hematogenous origin is considered. Why is it that practically all these

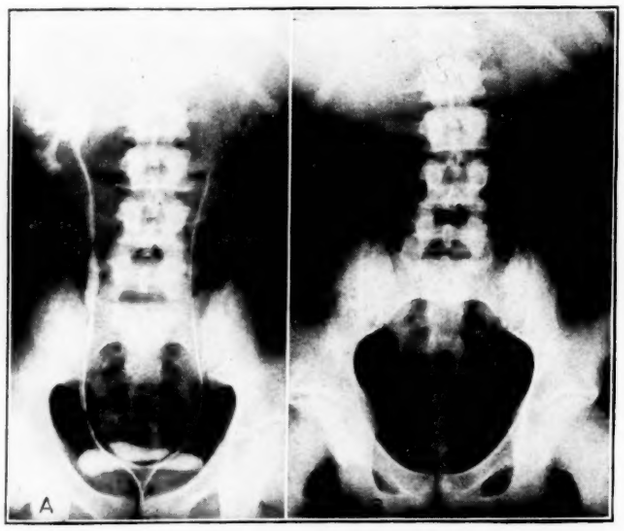


Fig. 4 (case 28).—*A*, appearance, Jan. 24, 1929, showing slight blurring of psoas shadow on the right and a beginning scoliosis; *B*, appearance, February 20, showing psoas shadow on right entirely lost and definite scoliosis with convexity to the left. The inner edge of the right kidney does not show.

infections are due to *Staphylococcus aureus* and *albus?* Why is it that the streptococcus is rarely the primary infecting agent? And why, when so many colon infections occur in the kidney, many of them of years' standing, do they so seldom create a colon bacillus abscess except by the intervention of trauma? These questions are difficult to answer. It is known that the staphylococcus tends to agglutinate and form clumps much more readily than do the colon bacillus or streptococcus. It is also evident that these agglutinated bacteria may more easily block an end artery in the kidney, producing an infected infarct. However, as was stated before, instead of reaching the kidney it may by choice take the more direct route from the renal vessels into the poorly nourished perinephric fat itself.

Another explanation may lie in the fact that phagocytosis plays a large part in staphylococcic infections. The living germ is carried by the phagocyte, but the phagocyte itself may be and often is destroyed by a special toxin which staphylococci elaborate. The dead phagocyte is then carried to the infected area with a group of living bacteria within it.

We appreciate that these questions are answered meagerly, and they are presented with hesitation; but the clinical fact remains, and it adds one more argument in favor of the conclusion that skin infection is the source of hematogenous perinephric abscesses. Trauma to the kidney area may be a determining factor of a perinephric abscess. In these cases the etiology is probably the infection of a hematoma produced in the perirenal tissues. The reduced resistance of the tissues may cause to be lodged there bacteria from a distant focus, such as the skin, or, as apparently frequently happens, in slight infections of the kidney it lodges directly by contiguity in the injured tissues. It is interesting to note in this connection that most of the reported cases of perinephric abscesses in children have occurred secondary to trauma, and the colon bacillus is usually the infective agent. The relative absence of perinephric fat in the child renders the kidney more susceptible to direct trauma.

In a study of a series of thirty consecutive cases[2] in the San Francisco and University of California hospitals, an early diagnosis was not made in numerous instances. Furthermore, many of these patients were admitted with a diagnosis other than that of perinephric abscess. We believe that, with the more recent diagnostic aid of the x-rays and an understanding of the route of the infection, an early diagnosis can be reached.

We have found that the cases reported in this series fall into three general groups:

The first group is the most difficult of diagnosis on account of the utter lack of positive physical signs. The disease in these patients runs an obscure septic course and their chief complaints are fever, lassitude and general body aches, but they present no signs which might even suggest a kidney lesion. (With one of our patients of this group, even severe trauma over the kidney region failed to elicit the slightest pain or tenderness at any time. Later, however, an abscess was uncovered high and lateral to the kidney (case 29). Such patients are frequently wrongly diagnosed as having influenza, typhoid, endocarditis or tuberculosis for a considerable time, even by competent observers (cases 3 and 5).

The second group develops insidiously and much like the first, but with more general body soreness and only moderate symptoms and discomfort referable to the kidney region. Palpation, however, does show tenderness over the lumbar region, but a definite diagnosis is difficult to make, at least one sufficiently certain on which to base an operative procedure. At times these patients have such guarding and tenderness over the abdominal muscles on the right that a diagnosis of appendicitis or some other acute abdominal condition is difficult to rule out (cases 8 and 19).

Fig. 5 (case 13).—Complete obliteration of the psoas shadow and scoliosis, with convexity away from the affected side.

The third group comprises those patients whose acute symptoms begin more suddenly, although many may give a prodromal history similar to that in the other groups. These patients usually complain of severe pain referable to the kidney region and also of chills with fever and gastro-intestinal disorders, with occasional nausea and vomiting. The pain and tenderness is definitely localized to the lumbar region over the exit of the lumbar nerves and is frequently referred

2. Five of these cases were from the service of Dr. Frank Hinman.

to the hip and leg of the affected side. There is generally definite guarding of the lumbar, psoas or abdominal muscles, and often a palpable mass in the kidney region. Many patients of this group are wrongly diagnosed as presenting orthopedic problems and are so treated.

The final pathologic picture of an overlooked diagnosis in any group is that of a large subcutaneous abscess pointing in the flank.

The laboratory work in all these groups consistently shows a relatively high polymorphonuclear leukocytosis. The urinary and cystoscopic observations are surprisingly negative. The cultures from the abscesses are predominantly staphylococcus.

Roentgen examination gives the first positive confirmatory evidence of perinephric abscess. There are several confirmatory signs. A fluoroscopic examination may show a delayed excursion of the diaphragm which is usually indicative of subphrenic disease. In our series we have found as a most constant sign that roentgen films taken of both kidney regions show an obliteration of the lateral border of the psoas muscle and an indefinite kidney shadow on the affected side. Attention was first drawn to this sign in 1912 by Dr. Alexander [3] of Leipzig, and his observations were verified by Dr. Révész [4] of Budapest in 1925. Independent observations were made and reported by Lipsett [5] and by Beer [6] in 1928.

We have found that a roentgenogram taken at the early onset of clinical symptoms may show indefinite changes in the psoas shadow. Repeated plates, however, in the course of a few days will show the shadow disappearing, and if this persists the diagnosis can be definitely made. We are presenting two such cases that we saw (cases 27 and 28, figs. 3 and 4). A successful localization and drainage of an abscess was made possible by this sign alone in a case that showed no other confirmatory evidence except fever and leukocytosis; i. e., physical signs and symptoms were entirely absent (case 29).

The reason for the absence of this shadow demands consideration, as we have noted in some of our cases that the abscess was located high up and laterally but the psoas shadow was indistinct throughout its entire length. A very slight edema of the perirenal fat is no doubt sufficient to prevent a psoas shadow and a blurring of the kidney outline. Consideration must also be given to the blocking of the lymphatics within the muscle itself with some lymph edema, which may also play a part in this obscuration. The main lymphatic trunks are intimately associated with the psoas muscle.

A third diagnostic sign also described by the writers referred to consists of a scoliosis of the lumbar vertebra with its convexity away from the affected side. Some of these men believe that this sign is more important than the loss of the psoas muscle shadow. In our cases, however, we found that this sign was not always present, and when found it merely supplemented the absent shadow of the psoas, which was a uniformly constant finding. The reason for the appearance of this sign is probably in part a protective compensatory phenomenon. No doubt it is due also in part to the irritation of the nerves from an inflammatory reaction or from the involvement of the lymphatics along the psoas, causing a psoas spasm on the affected side. With some of our patients this sign was absent in the presence of an abscess of considerable size. We note, however, in these cases that the abscess was higher and lateral and not intimately associated with the nerve roots. These cases showed an obscure psoas shadow.

Other roentgen signs may occasionally give confirmatory data, but it would seem that they are of less constant and practical significance. Cystoscopic and pyelographic studies have been of little diagnostic aid to us. Some authors [7] have described distortion of the pyelogram on the affected side due to extrinsic pressure. Mathé [8] has also noted that in these cases there is not the normal descent of the kidney in the erect posture. We have found, however, that the persistent obscuration of the psoas shadow, when associated with a suspicious clinical history, is of far more practical value.

A study of these thirty cases of acute hematogenous perinephric abscesses confirms us in the belief that this disease is not diagnosed early or correctly by the profession at large. Even when the patient is hospitalized under the care of competent observers, operation is long deferred because of uncertainty in diagnosis. An understanding of the pathologic sequence of this disease and careful roentgen studies will give diagnostic assurance and earlier operative intervention.

## CONCLUSIONS

1. The etiology of acute hematogenous perinephric abscess and acute hematogenous osteomyelitis is quite analogous.
2. The infective embolus lodges in the terminals of the end arteries which supply the renal cortex and the perirenal fat.
3. The etiology, clinical history, and physical and laboratory evidence of cortical lesions and perinephric abscesses are parallel.
4. Cortical abscesses probably initiate most metastatic perinephric abscesses.
5. Cortical and perinephric abscesses result from the property of the staphylococcus to clump and stimulate phagocytosis.
6. Repeated confirmatory roentgenograms of the lumbar region showing an obliteration of the psoas shadow are valuable diagnostic aids when such obliteration is associated with a suspicious clinical history.

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## ABSTRACT OF DISCUSSION

DR. A. H. PEACOCK, Seattle: Clinically these patients come, first of all, with a rigid spine. Secondly, they usually have fever accompanied by chills and sweat. If it had been long standing there would have been considerable loss in weight. The patient has every indication of being very ill. The leukocyte count is invariably elevated. In a series of cases it averaged around 23,000.

DR. CHARLES P. MATHÉ, San Francisco: Of particular interest is the first group described by the authors in which there is an utter lack of positive clinical observations. In these, however, the abscess is usually located very high in the renal fossa away from the kidney. The differential diagnosis of perinephric abscess offers many problems to the urologist as well as to the general surgeon. It is often confused with influenza, tuberculosis and endocarditis, and with abdominal

3. Alexander: The Examination of Kidney and Ureters, Leipzig, Bela, 1912.
4. Révész, Vidor: Roentgen-Ray Diagnosis of Perinephritic Abscess, correspondence, J. A. M. A. **91**: 266 (July 28) 1928.
5. Lipsett, P. J.: Roentgen-Ray Observations in Acute Perinephric Abscess, J. A. M. A. **90**: 1374 (April 28) 1928.
6. Beer, Edwin: Roentgenographic Evidence of Perinephric Abscess, J. A. M. A. **90**: 1375 (April 28) 1928.
7. Peacock, A. H.: Perinephric Abscess, Surg. Gynec. Obst. **48**: 757 (June) 1929.
8. Mathé, C. P.: Movable Kidney, Surg. Gynec. Obst. **40**: 605 (May) 1925.

lesions such as appendicitis, salpingitis, gallbladder disease and gastric ulcer. It is also often confused with pyelonephritis and cortical abscess of the kidney. Careful analysis of the urine collected by ureteral catheterization is of great value in differentiating perinephric abscess from cortical abscess and pyelonephritis. In pyelonephritis cellular casts, leukocytes and organisms are found in abundance and the bladder is likely to become infected early, giving the characteristic cystoscopic picture of cystitis; the extreme illness of the patient is commensurate with the urinary conditions. In both perinephric and cortical abscess there is a relative paucity of abnormalities in the urine in proportion to the severity of the illness. In cortical abscess one is more likely to find a large number of staphylococci in direct proportion to the amount of kidney involved. Another important point in diagnosis is the history of previous infection of the skin. The primary focus may also be located in the lower genital tract, such as the prostate, seminal vesicles, uterus and fallopian tubes. This primary focus is not generally recognized nor has it received due consideration by the urologist and general surgeon. Intelligent interpretation of the roentgenographic observations is also of assistance. Obscuration of the psoas shadow is significant. Unfortunately it also occurs in cortical abscess and extensive pyelonephritis complicated by perinephritis and paranephritis. The lack of mobility of the kidney in the dorsal position points toward severe infection anchoring the kidney to the perinephric tissues. When the abscess is located ventrad to the kidney, it will often press on the ureter and may displace it mesially and cause a pressure defect in the ureterogram. In doubtful cases an exploratory operation consisting of a lumbar incision should be made. This assures early drainage, and prevention of extension of the abscess or involvement of the perinephric tissues of the opposite side.

DR. GEORGE K. RHODES, San Francisco: We purposely did not discuss treatment. Our procedure in these cases has been to make a liberal exploratory incision which will permit of a free investigation of the entire kidney and surrounding tissues if necessary. Even with such an exploratory incision the abscess is often small and difficult to locate. Indeed, the abscess is occasionally overlooked entirely and later ruptures spontaneously into the operative wound. When the abscess is large, such as Dr. Peacock describes, the problem of drainage is of course a simple one. With one particular patient of this series, who presented the classic signs described in our paper, I explored the entire kidney cortex and pelvic region and also the psoas muscle throughout its course and found no suggestion of pathologic change. The abdomen was then opened and no pathologic condition was found. The patient's condition continued septic until the eighth day, when the original exploratory incision showed signs of deep fluctuation. The incision was opened and a large amount of staphylococcus pus evacuated with a rapid and uneventfully successful convalescence. This particular patient probably had a small abscess located high and laterally which was completely overlooked. This type of case also illustrates that there may be perinephric abscess without gross lesions of the renal cortex. It also shows that the obliterated psoas shadow and the changes are not due to superimposed accumulation of purulent exudate. We have repeatedly made this observation when a small abscess was located high and laterally.

**A Story of Bacteriology.**—The story of bacteriology is at once a romance and a realistic tale of supreme human achievement. The illustrious names which mark its pages have become familiar; the memory of the many laboratory workers who have gone unsung is none the less cherished by those who adjust the microscope and inoculate the guinea-pig. From van Leeuwenhoek to Noguchi, research in bacteriology has been as the development from the first rough-hewn cave to the modern sky-scraper. What the bathtub was to Archimedes, and the falling apple to Newton, lenses were to van Leeuwenhoek. . . . The finest microscopes today, magnifying objects more than two or even three thousand diameters, are but the logical development of van Leeuwenhoek's simple but effective seventeenth-century device.—Kopeloff, Nicholas: Man Vs. Microbes, New York, Alfred A. Knopf, 1930.

# SCARLET FEVER PROPHYLAXIS

## USE OF BLOOD SERUM FROM PERSONS WHO HAVE RECOVERED FROM SCARLET FEVER

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During the past year, the health department has been able to arrange with persons who have recovered from scarlet fever to give from 100 to 300 cc. of their blood for the prevention of scarlet fever among contacts. The serum was collected from this blood, tested according to the Kahn method and, when found to be negative, pooled and filtered. Phenol (carbolic acid) was then added to the serum to the extent of 0.4 per cent as a preservative. It was then incubated for a week, and, when sterile, was put up in 7.5 cc. containers for distribution to physicians. More than a thousand packages were given out, and the physicians kindly sent us a record of the result.

In order to determine the value of the method, it is necessary to compare the results with those in suitable controls. For this purpose, the records of families in which scarlet fever occurred, but in which no serum was given, were studied. In order to make a fair control group, certain considerations were adopted:

TABLE 1.—*Number of Cases of Scarlet Fever Developing Among Contacts* *

| | (a) Contacts Who Received Serum | | | | | | | (b) Contacts Who Did Not Receive Serum | |
|---|---|---|---|---|---|---|---|---|---|
| | | Days After Receiving Serum Scarlet Fever Developed | | | | | Days Exposed to a Case of Scarlet Fever | | |
| Age | Number | 2 | 3 | 4-15 | 15-30 | Total | | Number | Developed Scarlet Fever |
| 1 | 47 | .. | .. | .. | .. | 0 | ..... | 29 | |
| 2 | 47 | .. | .. | 1 | .. | 1 | 28 | 22 | |
| 3 | 54 | .. | 1 | 1 | .. | 2 | 28 28 | 24 | |
| 4 | 38 | 1 | .. | 2 | .. | 3 | 28 28 28 | 21 | |
| 5 | 44 | 1 | 1 | .. | .. | 2 | 7 28 | 32 | |
| 6 | 35 | .. | .. | .. | .. | 0 | ..... | 15 | |
| 7 | 35 | .. | .. | 1 | .. | 1 | 28 | 20 | |
| 8 | 32 | .. | .. | 1 | .. | 1 | 28 | 20 | |
| 9 | 22 | .. | 1 | .. | .. | 1 | 28 | 18 | |
| 10 | 21 | .. | .. | .. | .. | 0 | ..... | 14 | |
| 11-15 | 43 | .. | .. | 1 | .. | 1 | 28 | 58 | |
| 16-20 | 32 | .. | 1 | .. | .. | 1 | 6 | 48 | |
| Total | 450 | 2 | 4 | 7 | .. | 13 | | 321 | |
| Per cent | | | | | | 2.9 | | | |

* The two groups of contacts occurred during the same time of year, and in approximately the same age groups.

1. The serum is not expected to give protection longer than four weeks; therefore, cases developing in those who have been exposed to scarlet fever longer than four weeks should not be charged against the serum; likewise, control contacts who develop scarlet fever after four weeks' exposure should not be used for comparison.

2. A case of scarlet fever developing the day after the serum has been given should not be charged against the serum.

3. Since the serum was used for the most part in contacts under 20 years of age, and other members of the family over 20 years of age did not receive serum, in the control families only contacts under 20 years of age should be used for comparison. In other words, only contacts of the same age group should be compared.

4. The period of exposure of the contacts in the two groups should be approximately the same.

5. The relative number of primary cases to contacts in the treated and untreated groups should be as nearly alike as possible.

With these conditions in mind, table 1 has been prepared. From this table it will be noted that the incidence of secondary cases of scarlet fever was 2.9 per cent among those who received the serum, and 12.8 per cent among those who did not receive the serum. It will be further noted that the decrease in cases occurred in all the age groups. In the younger age groups the number of controls who did not receive serum is about half the number given serum, so that we may assume a considerable saving in those age groups.

TABLE 2.—*Treated and Control Contacts Arranged According to Period of Exposure to Scarlet Fever*

| Days of Exposure | Treated Group Contacts Receiving Serum: Number | Treated Group Contacts Receiving Serum: Secondary Cases | Control Group Contacts Not Receiving Serum: Number | Control Group Contacts Not Receiving Serum: Secondary Cases | Calculated Number of Secondary Cases if Number of Controls Equaled Treated Number |
|---|---|---|---|---|---|
| 1 | 81 | 0 | 74 | 4 | 4 |
| 2-4 | 88 | 0 | 153 | 12 | 7 |
| 5-10 | 15 | 2 | 25 | 7 | 4 |
| 11-28 | 266 | 11 | 69 | 18 | 70 |
| Total | 450 | 13 | 321 | 41 | 85 |
| Percentage | | 2.9 | | 12.8 | 18.9 |

It is of interest to note the relation of the period of exposure to the incidence of secondary cases. For this purpose, the records were rearranged into a table which shows the contacts who were exposed one day, from two to four days, from five to ten days, and from eleven to twenty-eight days. Since the quarantine period for scarlet fever is twenty-eight days, there were many contacts who remained in quarantine twenty-eight days and were then assumed to be no longer exposed. Table 2 indicates these relations and, further, estimates the number of secondary cases which would have appeared if the same number of controls were secured as there were treated contacts. From this table it is apparent that the serum protected those exposed for short periods. Nine of the eleven treated contacts who developed scarlet fever developed it only after having been exposed twenty-eight days. If the same attack rate prevailed among the treated cases that prevailed among the controls, about one fifth might have been expected to develop scarlet fever instead of about one thirty-fourth, as is indicated in this table.

The next question of interest is, How much of the reduction in incidence among treated cases was due to serum and how much to natural resistance? Among the treated contacts, 2.9 per cent developed scarlet fever and 97.1 per cent did not develop scarlet fever. Among a similar group of untreated controls, 18.9 per cent developed scarlet fever and 81.1 per cent did not. This means that, of 450 untreated contacts, 365 would not develop scarlet fever and eighty-five contacts would develop the disease. But only thirteen of the eighty-five, or 15.3 per cent, developed scarlet fever. Hence seventy-two, or 84.7 per cent, were protected by the convalescent serum.

In these series of contacts there were 263 primary cases which exposed to scarlet fever the 450 treated contacts. There were 211 primary cases which exposed to scarlet fever the 321 untreated contacts. The ratio of primary cases to contacts is 1 to 1.7 in the treated group and 1 to 1.5 in the untreated group. The difference is not very great but the incidence of exposure is greater with the treated than with the untreated, so that more secondary cases might be expected in the treated than in the untreated group. Apparently the serum overcame the factor of greater exposure.

An effort was made to determine the relative potency of the different batches of serum. For this purpose table 3 was prepared. The letters have no significance except that the different batches were named in alphabetical order. Other serums were prepared at the same time, so that the letters which were given to convalescent scarlet fever serums are not in sequence. However, the order mentioned in the table indicated the order in

TABLE 3.—*Immunization of Scarlet Fever Contacts with Blood Serum of Patients Recovered from Scarlet Fever, by Age, and Batch of Serum**

| Batch Letter | Age of Contacts in Years: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11-15 | 16-20 | Total Contacts Treated | Secondary Cases | Percentage of Secondary Cases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AN | 1 | 3 | 1 | 1 | ... | 2 | ... | ... | ... | ... | ... | 2 | 10 | | |
| AY | ... | ... | 2 | ... | 2 | ... | 1 | 1 | ... | 1 | 5 | 2 **3** | 14 | 1 | 7 |
| AZ | 4 | 4 | 4 | 3 | ... | ... | 2 | 1 | ... | 3 | 4 | 2 | 28 | | |
| BC | 1 | 2 | 2 | 3 | ... | ... | 1 | 2 | 2 | 1 | 3 | ... | 17 | | |
| BG | ... | 1 | 2 | 5 | 1 | 1 | 2 | 2 | ... | ... | 2 | ... | 16 | | |
| BI | 8 | 9 **10** | 3 | 4 | 6 | 3 | 6 | 2 | 2 | 3 | 3 | ... | 49 | 1 | 2 |
| BJ | 1 | 1 | 3 | ... | 3 | ... | 1 | 1 | 1 | 1 | 1 | 1 | 14 | | |
| BK | 8 | 4 | ... | 2 **13** | 1 | 2 **41** | 3 | 3 **14** | 3 **1** | ... | 1 | 3 | 30 | 2 | 7 |
| BM | 1 | ... | 1 **6** | ... | ... | 1 | 2 | ... | ... | 3 | 2 | ... | 10 | 1 | 10 |
| BN | 1 | 5 | 6 | 2 | 6 | 3 | 1 | ... | 1 | 2 | 3 | 4 | 34 | | |
| BQ | ... | 2 | ... | ... | 2 | 1 | 1 | 3 | 3 | ... | 1 | 1 | 14 | | |
| BX | 2 | 4 | 2 | 1 | ... | 1 | 1 | 1 | ... | ... | 4 | 1 | 17 | | |
| BZ | 5 **33** | 4 | 3 | 2 **14** | 1 **3** | 1 | 3 **40** | 1 | ... | 2 | 5 | 2 | 29 | 2 | 7 |
| CE | 2 | 1 | 2 | ... | 2 | 1 | 3 | 1 | 1 | 1 | ... | 1 **39** | 15 | | |
| CQ | 3 | 1 | 3 | 2 | 4 | ... | 2 | 1 | 1 | 2 | 1 | ... | 20 | | |
| CR | 2 | ... | ... | ... | ... | 2 | ... | 2 | 1 **3** | ... | 2 | 2 | 11 | 1 | 9 |
| CX | 1 | ... | ... | 2 3 | 2 **2** | ... | 1 | ... | 1 | ... | 1 | ... | 9 | 2 | 22 |
| CY | 1 | 1 | ... | 3 | 3 | 4 | 3 | 4 **1** | 1 | ... | 3 | 2 | 25 | | |
| DC | 2 | 3 | 5 | 5 | 1 | 3 | 2 | 4 | 1 | 2 | ... | ... | 28 | | |
| DG | 2 | 4 | 2 | 3 | ... | ... | ... | 1 | 2 | ... | 1 | ... | 15 | | |
| DH | 2 | 1 1 | 2 **3** | 2 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | ... | 16 | 1 | 6 |
| DI | ... | 4 | ... | 2 | ... | 2 | 1 **5** | 1 | ... | ... | 4 **4** | 5 | 19 | 2 | 10 |
| DK | 2 | 1 | 3 | 1 | 2 | 1 | 2 | 1 | ... | ... | 1 | ... | 14 | | |
| DO | 5 **1** | 3 | 1 | ... | 2 **1** | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 21 | | |
| Total | 54 | 58 | 47 | 44 | 40 | 31 | 42 | 35 | 22 | 23 | 49 | 30 | 475 | 13 | |
| Secondary cases | 0 | 1 | 2 | 3 | 2 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | .. | 13 | |

* The figures in boldface indicate the day after the serum was given on which the secondary case developed. When the onset of the secondary case occurred the next day or more than twenty-eight days after the serum was given, the case was not charged against the serum.

which they were prepared. There were a few batches in which the records of the used serums were incomplete, so that the number of complete records was small and was therefore deemed useless for a table of this kind.

There are twenty-five batches, nine of which had one or more failures to protect. The percentage of failure is not very high except in CX. However, the number of contacts treated was small, so that we are inclined to disregard this particular batch.

There are a number of questions which immediately arise about these batches of serum. For instance, when did the donor have scarlet fever, and what was the age of the batch when it was given to the contact? Table 4 presents the facts bearing on these points.

The vertical space in the middle indicates the date when the batch of serum was pooled. The date opposite the batch letter is the date when the last donor of the batch was bled. The caption to the left of the space in the middle indicates the number of months before bleeding that the donors had scarlet fever. The figures below indicate the number of donors. For example, five donors contributed serum to AY. Two of the donors had scarlet fever eight months prior to bleeding.

The numbers in the columns to the right of the middle indicate the number of contacts treated by serum. The age of the serum is indicated by the caption. For example, AY was given to fourteen contacts, thirteen of whom received the serum six months after it was prepared. The asterisk indicates that one of these thirteen developed scarlet fever.

On inspection of this table it will be noted that, so far as impotence of serum as indicated by the appearance of secondary cases is concerned, donors who have had scarlet fever more than a year previously seem to contribute potent serum. That is to say, the secondary cases do not appear exclusively from serums from donors who had had scarlet fever a year or more before. After some of these serums there were no secondary cases. The age up to six months does not seem to be a factor, although the oldest serum does have the highest percentage of secondary cases. This is thought to be explained by the use of small numbers.

In connection with this point of potency there is an interesting observation. All these serums had been filtered except BN, which was not filtered. BM and BN are from the same pool. BM was filtered, and one recipient developed scarlet fever six days later, but after an exposure of twenty-eight days, while none of the recipients of BN developed scarlet fever. This observation is simply recorded without a conclusion being drawn.

Eight of the seventy-two donors fainted at one or more of the times that they were bled. They recovered promptly and went home without difficulty. Their serum is found as often in batches which did not permit scarlet fever to develop as it is among those batches in which scarlet fever developed. Apparently the physical condition which made the donors faint did not affect the potency of the serum. However, the serum they contributed ranged from 11 to 32 per cent of the volume of the total pool, so that any deficiency may have been compensated for by the volume of other serums in the pool. Two batches having 30 per cent serum from fainting donors did not result in secondary cases among the contacts to whom they were given.

TABLE 4.—*Study of Convalescent Scarlet Fever Serum, by Consecutive Batches, Showing Relation of Complete Batch to Time When Donor had Scarlet Fever and Age of Batch When Contact Received Serum*

| Series No. | | Number of Months Between Incidence of Scarlet Fever and Bleeding of Donor | | | | | | | | | | | | | Age of Batch in Months when Serum was Given Contact | | | | | | | | | | | | Secondary Cases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Over 12 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11-12 | 13-15 | Over 15 | |
| AN | 5/14/28 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 3 | 1 | 3 | 1 | .. | 4 | 2 | .. | .. | .. | 1 | .. | .. | .. | .. |
| AY | 9/26/28 | .. | .. | .. | .. | .. | 2 | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 13* | .. | .. | .. | .. | .. | .. | .. | 1 |
| AZ | 10/ 3/28 | .. | .. | .. | .. | .. | 2 | 1 | 5 | .. | .. | .. | .. | .. | 3 | .. | 9 | 11 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| BC | 10/10/28 | .. | .. | .. | .. | .. | .. | 1 | 8 | .. | .. | .. | .. | .. | .. | .. | .. | 5 | 28 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| BG | 10/24/28 | .. | .. | .. | .. | .. | .. | 5 | 1 | .. | .. | .. | .. | .. | .. | 1 | 14 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| BI | 11/ 7/28 | .. | .. | .. | .. | 2 | 1 | 4 | 2 | .. | .. | .. | .. | .. | 14 | 3 | 10 | 27 | 6* | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| BJ | 11/14/28 | .. | .. | .. | .. | .. | 1 | 5 | .. | .. | .. | .. | .. | .. | 13 | 12 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| BK | 11/19/28 | .. | .. | .. | 1 | .. | 2 | .. | 2 | .. | .. | .. | .. | .. | .. | 14 | 24** | 7 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| BM | 12/ 3/28 | .. | .. | .. | 2 | 1 | 5 | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 12* | 7 | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| BN | ..... | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 6 | 28 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| BQ | 12/12/28 | .. | .. | .. | .. | .. | 7 | 1 | .. | .. | .. | .. | .. | .. | 3 | 15 | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| BX | 12/19/28 | .. | .. | .. | 1 | 1 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 13 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| BZ | 1/ 3/29 | .. | .. | 1 | .. | 1 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 45** | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 |
| CE | 1/30/29 | .. | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 20 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| CQ | 2/25/29 | .. | 1 | 1 | 2 | 3 | .. | .. | .. | .. | .. | .. | .. | .. | 6 | 14 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| CR | 3/ 6/29 | .. | .. | 4 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 5* | 10 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| CX | 4/18/29 | .. | .. | 2 | .. | .. | 1 | .. | .. | .. | 2 | .. | .. | .. | 11** | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 |
| CY | 4/22/29 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | 1 | 1 | 29 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| DC | 5/ 9/29 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 5 | 1 | 1 | .. | 31 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| DG | 5/13/29 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 2 | 18 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| DH | 5/17/29 | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | 4 | 1 | 26* | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| DK | 5/24/29 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | 17 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| DO | 6/ 3/29 | .. | .. | .. | .. | .. | .. | .. | 1 | 4 | 1 | .. | .. | .. | 30 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| DI | 5/20/29 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | 3 | 3 | 32** | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 |

Each asterisk (*) indicates a treated contact who developed scarlet fever.

The laboratory work to show the neutralization of toxin by convalescent serum has been done repeatedly by others, so that it will not be referred to here.

The twenty-four batches contained the serum from four to nine donors. Among the seventy-two donors, a few have contributed blood once; many more have contributed to two or three batches, several to six batches, and one to eight batches. No particular donor was found to contribute blood exclusively to batches which might be considered a little inferior. We have not discovered a method of detecting the more desirable donors except on the basis of general health. We have accepted only donors who were in good health. We found it advisable to require the donors not to eat food during a period of three hours before bleeding.

The use of this serum has been found particularly valuable in preventing the spread of scarlet fever in hospitals and private schools. These institution records are not included in the study of contacts recorded here, but it is of interest to note that the nurses and orderlies who were Dick positive, and susceptible patients in several hospitals when outbreaks of scarlet fever occurred, have been given this serum, and the outbreak has been checked at once. In a large private school near Detroit, scarlet fever had been appearing among the students for several weeks. Nothing appeared to

check the spread of the disease until the Dick-positive students were given convalescent serum.

### CONCLUSIONS

1. Four hundred and fifty contacts with scarlet fever have been given 7.5 cc. each of the pooled blood serum from donors who have had scarlet fever within a year or a little later. The serum has been given to the contacts within six months from the time it was drawn. A study of the subsequent history of the contacts shows that 2.9 per cent developed scarlet fever, while 12.8 per cent developed scarlet fever in a similar group of contacts who did not receive the serum. Apparently about 85 per cent were protected from developing scarlet fever.

2. Immunity apparently does not last longer than three or four weeks.

3. The prophylaxis is particularly valuable for young children who have been recently exposed to scarlet fever. It is also recommended for the infirm.

4. Prophylaxis has been found useful in checking outbreaks of scarlet fever in hospitals and other institutions.

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# THE CANCER PROBLEM IN THE LIGHT OF MODERN VIEWS

FIRST BELFIELD MEMORIAL LECTURE *

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Progress in cancer therapy has undoubtedly been impeded by the tenacious clinging of the profession to traditional concepts. A tendency to search for a single cause of cancer has prevailed, without discrimination between essential and contributory factors. Two conceptions have been considered axiomatic, and all conclusions have been based on them. It has been accepted that cancer in its initial stage is a strictly local disease and that therapeutic efforts may be successful only by virtue of complete regional eradication of the tumor. Clinical observation and consideration of the physiologic facts make it probable that cancer is produced by the collaboration of several factors.

Attempts at determining an external hostile invasion of the body as an etiologic factor of cancer have failed; therefore it may be advisable to look elsewhere for an acceptable etiologic theory. There is no reason to believe that the aggregation of cells called a cancer should not be subject to the same biologic laws that govern the life of all other cells. Within the body prevails a continuous struggle between stimulating and regulating forces. Certain cell groups appear and develop at certain periods of life and, after degeneration, are reproduced. At the same time under normal conditions their growth and multiplication is limited by regulating forces. A disturbance of this balance is featured by local excessive growth, such as in acromegaly. But this phenomenon does not imply a malignant condition, for the production of which additional factors evidently are necessary.

It is easily understandable that persistent chemical or mechanical irritation may furnish a contributory factor in producing cancer, especially in structures within which the normal equilibrium between stimulating and regulating forces is rather unstable. In some bodily areas, for instance at the narrows of the intestinal tract, on account of their function there prevails an abundant desquamation and reproduction of epithelial cells. It is apparent that in such localities additional irritation may increase this hyperproduction of cells, thus disturbing the normal equilibrium in favor of stimulation. In the same way the appearance of uterine cancer may be explained on the basis of glandular hyperplasia of the endometrium.

This consideration leads to establishing the concept of predisposition. A distinction must, however, be made between general and localized predisposition. It is well known that some individuals are apt to develop cancers in various organs, either simultaneously or in successive order. In other individuals there are areas of predilection, and these predisposed structures respond to special irritations. As examples of such a collaboration of causative factors, the vesical cancer in aniline workers and the pulmonary cancer in cobalt miners may be cited. That the constitutional factor plays an important part is evidenced by the fact that, out of millions of individuals exposed to the same kind of mechanical or chemical agents, only a relatively small number develop cancer.

The dignity of the constitutional factor is emphasized by another clinical experience. As a rule a preexisting cancer of the cervix will develop rapidly during pregnancy, but there are cases on record in which cancer of the cervix showed decided involution during gestation.

The correlation of local and general predisposition is illustrated by some interesting observations in bladder surgery. There are instances in which the coagulation of vesical cancer obtained lasting results without recurrence of the malignant condition. But in some individuals either on the former site of the growth or in its vicinity there appeared after some length of time one or more papillomas. That these were of a benign character was evidenced not only by the cystoscopic aspect but also by the fact that they were removed definitely by one cystoscopic fulguration. This suggests that there still prevailed in the vesical tissue a tendency toward tumor formation, while constitutional changes prevented the establishing of malignant growth.

Food for thought is furnished by a contention of Boerstrom, who spent many years in investigating cancer. He asserts, and his reasoning is rather convincing, that the traditional belief in the production of cancer by the transformation of epithelial cells is no longer tenable in the light of his investigations. He is ready to prove that a once highly differentiated cell never will change its established characteristics. He states that cancer is produced by the transformation of the not specially differentiated cells of the reticulum around the capillaries. This would help to explain the production of cancer mainly by constitutional influences in areas that are not exposed to any mechanical irritation, such as cancers of the pelvic fibrous tissue.

One may be entitled to the statement that, in view of the enumerated instances, cancer even in its initial stages is never a genuine local disease but only the local manifestation of a general derangement. If this is once admitted, the statement becomes permissible that the total removal or direct destruction of an apparently solitary tumor is not the only essential therapeutic factor. Even if one should succeed in removing the entire cancerous tissue present, this procedure does not furnish any guaranty against recurrence, because this removal does not deal with the underlying causative factors.

* Read before a joint meeting of the Chicago Medical Society and the Chicago Urological Society, Oct. 24, 1929.

Definite therapeutic results obtained by partial irradiation or incomplete mechanical destruction of malignant tumors help to support belief in the importance of the constitutional factor. In multiple malignant lymphogranuloma, if the condition is amenable at all, the irradiation of a single tumor will suffice to bring about the disappearance of all the other tumors, even if they are quite distant from the point of irradiation. Such a result obviously cannot be ascribed to local destruction by the rays.

In the majority of vesical cancers located in the trigon it is technically impossible to coagulate the tumor in its entirety because a complete carbonization would lead to a perforation into the rectum or vagina. In spite of that, definite results have been obtained in a number of instances. Here, again, another factor beyond the direct destruction must be held responsible for the disappearance of the cancer. Similar observations have been made in coagulation of cancers of the tongue, the uterus and the rectum.

The Ries-Wertheim hysterectomy with the majority of gynecologists is still the method of choice in dealing with cancers of the cervix and portio of the uterus. One of the features of this procedure is the search for cancerous glands and their removal. There are a number of cases on record in which several groups of palpable lymphatic glands later on histologically identified as cancerous were removed at hysterectomy and the patients remained well. It is hardly plausible that in such instances all the lymphatics infested with cancerous cells were removed, and occasional postmortem examinations support this contention. It again must be admitted that another factor besides the mechanical one must have attended to the destruction of these microscopically apparent but not palpable cancer particles.

An understanding of this additional constitutional factor was brought about by an important discovery, the result of extensive research work of biologists. It was found that there exists in the animal and the human body a well defined system of specially endowed cells in which reside practically all the defensive forces of the body, this system being called the reticulo-endothelial system. It was demonstrated that these cells not only are capable of attending to the destruction of cancer cells but also are intimately connected with all phases of immunity, this term being used in the widest sense of the word. Therefore it may not be unreasonable to assume that these cells under stimulation produce defensive and regulating materials dealing directly with the factors causative of cancer production.

There is available a clinical observation that may be used in support of this theory. It has been repeatedly observed that if injections are made in a cancer carrier of blood taken from another patient whose cancer has been irritated by irradiation or by enzyme injections, the cachectic symptoms in the recipient show decided improvement, which improvement persists for some time. It is not too far fetched to assume that defensive ferments produced in the donor after having been transmitted to the recipient are the cause of the improvement thus noticed. The blood transfusion per se cannot be held responsible for this salutary effect because the quantities injected were too small (from 20 to 50 cc.) to permit of such a conclusion.

It also has been found that the functional capacity of the defensive cells of the reticulo-endothelial system is raised by their receiving certain proteins or metallic compounds. This fact may explain how the administration of proteins, such as the metabolic products of bacteria, or the injection of some metals, such as gold or lead, in rare instances have been instrumental in producing favorable results.

It also must be considered that any localized increase in metabolism attracts these defensive cells to the area of stimulation. The rather favorable results of electrocoagulation in cancers are in harmony with these concepts.

The direct and remote effects of surgical diathermy have been most intensively studied following operations on the bladder and its appendages. It has been found that electrocoagulation in short order is followed by a striking abundance of macrophages in the area surrounding the coagulated structures, this area being called the perithermic zone. Some authors state that the numerical degree of the appearance of these cells varies with the prognosis.

There is another item not yet absolutely convincing because the number of cases is too small to permit of definite conclusions. In several patients with cancer in whom a stain test has proved a deficiency of the reticulo-endothelial system, all therapeutic efforts have proved to be futile. If it is once admitted as conceivable that the constitutional factor is of importance in producing cancer, it follows that therapeutic reasoning must adjust itself to this point of view.

The therapeutic intervention will have to be divided into two distinct items: (1) the mechanical removal of the accessible growth, and (2) the biochemical attack on the causative factors. Surgery cannot ever be entirely dispensed with because, even if chemotherapy should succeed in producing absorption of the intact bulk of the tumor, the already degenerated part of the growth will always have to be removed by mechanical means.

The other aspect of the therapeutic problem will be the changing of the relation between stimulating and regulating forces. Success in creating a decided preponderance of the regulating impulses and suppression of the stimulating ones should lead to an absorption of the intact tumor part, while in a later period restoring the normal balance between the antagonistic forces should prevent recurrence of a malignant condition.

The essential feature of such a therapeutic effort is a biochemical one. By electrocoagulation and radiotherapy in some instances it is possible to produce a beneficial biochemical systemic reaction, but this is accomplished in an empirical way. We are groping in the dark. It will be the task of the biochemists to find an exact way of bringing about the necessary reaction. They will have to determine and isolate the compounds carrying the stimulating and regulating impulses. The next step must be to develop the proper reagents necessary to guarantee a desirable overproduction and control of the regulating and stimulating ferments. While it is known in a general way that the intake of some proteins or metallic compounds will stimulate the functional capacity of the reticulo-endothelial cells, it will be necessary to determine exactly which particular substance is most apt to increase the carcinophagic activity of the macrophages, which materials will stimulate the production of defensive regulating ferments, and which compounds will temporarily neutralize the stimulating ones. Along these lines it may be possible to develop a rational chemotherapy of cancer, cure without extensive mutilation comprising a guaranty against recurrence.

108 North State Street.

## A DANGEROUS PREPARATION OF DIGITALIS *

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Some time ago a committee [1] was formed at Bellevue Hospital for the systematic investigation of the value of digitalis in pneumonia. In the course of the work observations were made bearing on the subject of the potency of digitalis, bringing vividly to attention several points of great practical importance to the physician. A brief summary of these observations on potency is presented in this preliminary communication.[2]

Several hundred patients were studied and divided into comparable groups of untreated controls and those receiving digitalis. The drug was administered in full dosage by an approved technic; namely, 0.15 cat unit per pound of body weight in twenty-four hours. Two well known commercial specimens of digitalis were employed. The committee at first accepted the potency of both preparations as labeled by the manufacturers, which stated one to be about 50 per cent more potent than the other. This was taken into consideration in the calculations in order to give comparable doses. For example, a patient receiving a total dose of 18 grains (1.16 Gm.) of the stronger preparation, "B," was regarded as having received the same dose in potency as one receiving *27* grains (1.75 Gm.) of the weaker preparation, "A." This was a perfectly rational procedure and it was expected that similar results with the two preparations would be obtained. The committee was amazed, however, to find that preparation B, which was given in smaller doses in terms of grains, produced the higher grades of heart block in about three times as many patients, and vomiting in about ten times as many. The plan of dosage was changed when this was discovered and the size of the total doses was reduced, with a resulting marked reduction in the incidence of toxic symptoms. The committee was confronted with the fact that one preparation seemed to be at least twice as active as the other in man, though the two were being used in what they had reason to believe were similar doses in terms of activity.

The two specimens were then tested biologically by the cat method in the Department of Pharmacology of Cornell University Medical College. One specimen, A, was found to have the potency stated on the label, while the other, specimen B, proved to be twice as active as was stated by the manufacturer.[3] This substantiated the clinical results and showed that patients digitalized with the latter preparation had really received twice as much digitalis in terms of potency as those digitalized with the other specimen.

This is a striking illustration of the importance of knowing the exact potency of digitalis and, incidentally, of the close parallelism between the cat method of bio-assay and digitalis action in man. It calls attention, moreover, to another matter of great practical importance; namely, that of the misbranding of digitalis by manufacturers. It seemed incredible to the committee at first that anything but a correct statement of the activity would appear on the label of so potent a drug as digitalis. It is not possible to state how frequently digitalis on the market is misbranded. The fact that such practice has been discovered is a matter of grave concern to the physician who is compelled to rely on the accuracy of the manufacturing pharmacist.

Many physicians use digitalis in small doses, and in such cases erroneous statements regarding potency escape detection. However, it is well known that the administration of large doses rapidly to the point of minor toxic symptoms in certain patients with acute heart failure is often a life-saving measure. Those familiar with the use of digitalis will often give as much as 30 grains (2 Gm.) to such a patient in a short period of time, but if, as a result of misbranding, such a dose is equivalent in its action to 60 grains (4 Gm.), the results may indeed be disastrous.

It is well to be reminded that digitalis is a potent drug which varies widely in activity, and the experience of the pneumonia committee in the forthcoming reports will indicate even more clearly the dangers arising from the use of any preparation of digitalis the potency of which is not accurately stated.

Twenty-Sixth Street and First Avenue.

* From the Third (New York University) Medical Division of Bellevue Hospital and the Department of Pharmacology of Cornell University Medical College.

1. The committee for the study of digitalis in pneumonia is composed of Drs. Norrie and Woodruff of the First (Columbia University) Medical Division, Drs. Dubois, Niles and Eggleston of the Second (Cornell University) Medical Division, and Drs. Wyckoff and DeGraff of the Third (New York University) Medical Division of Bellevue Hospital.

2. A more detailed analysis is given in a paper entitled "The Importance of Differences in the Potency of Digitalis in Clinical Practice," Am. Heart J., to be published.

3. Specimen B was the digitalis tablet of Upsher Smith. These facts have been reported to the Council on Pharmacy and Chemistry, and we believe that adequate steps will be taken to insure correct labeling in the future.

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## CYANIDE POISONING, ACUTE AND NONFATAL, APPARENTLY FROM HOTEL SILVER POLISH *

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In June, 1928, about thirty persons attending a convention dinner at a leading hotel in Utica, N. Y., became acutely ill several hours following the meal. Dr. Hollingworth, city veterinarian, was asked to investigate the source of the trouble, which was considered to be food spoilage. No such cause could be discovered. In passing through the hotel pantries he detected the characteristic odor of prussic acid in a silver polish powder, used there as in many other hotels. It was later determined that this so-called silver-dip powder contained sodium cyanide to the extent of 20.54 per cent. Similar trouble was traced to the same product in a leading Syracuse hotel. The matter came to the attention of the New York State Health Department early in 1929, and two articles of warning appeared in the department's weekly *Health News,* Jan. 28, and July 22, 1929.[1]

While visiting a large hotel in Atlantic City during May, 1929, my family and I (five in all) were stricken with acute and severe gastro-enteritis of obscure origin. Knowledge of the cases at Utica led to the discovery that the same cyanide silver polish was being used at this Atlantic City hotel. The manager was delighted to learn at last of a probable explanation for the numer-

* Read, in part, before the Albany County Medical Society, Sept. 25, 1929.

* Owing to lack of space, this article is abbreviated in THE JOURNAL by the shortening of the section in which the literature is reviewed. The complete article will appear in the author's reprints.

1. Health News, New York State Health Dept., Jan. 28 and July 22, 1929.

ous complaints of illness from some of his guests. These complaints dated back at least a year. In each case the attack had resembled acute food poisoning, so often miscalled "ptomaine poisoning," and had been attributed to food spoilage, overeating, the water supply, or a fish diet. As in most other hotels, the dangerous material was promptly eliminated when its cyanide nature became known to the management. Among others a large Albany hotel has recently given up its use and has substituted an electrolytic polish. Following such elimination certain hotels, including the one in Atlantic City, have reported a prompt and permanent cessation of complaints of this type from their guests.

### REPORT OF CASES

Dr. Daniel E. Pugh of Utica has kindly supplied the following clinical picture of two of the severe cases in the 1928 group in his city. These persons were two of a dinner group of seven. Three of the seven were not affected in any way.

CASE 1.—A man, aged 45, suddenly began to suffer from severe nausea and acute abdominal cramps. This occurred at midnight, about four hours after eating, during which interval there had been no symptoms. He vomited actively and continued to do so from midnight until 2:30 a. m. The vomiting was followed by tenesmus, diarrhea, nausea and continued retching. There were violent gastric spasms and the diarrhea continued until nothing remained but a white watery mucus. The patient became cold and clammy over the entire body and was in a condition of shock. He was covered with profuse perspiration and was quite pallid and cyanotic. The pulse was rapid and irregular and of low tension. He was put to bed and heat was applied to the body. Intense and repeated stimulation was administered, consisting of black coffee by mouth, and caffeine and coramin by hypodermic. After about three hours' active work, the shock subsided. One-eighth grain (8 mg.) of morphine was placed under the tongue and the patient went to sleep. The following two days were spent at a hospital for convalescence. The urine showed albumin.

CASE 2.—A boy, aged 15, had practically the same symptoms as patient 1. The onset of the symptoms was at midnight. The boy was considered critically ill. There was blood in the stools, with attendant cold and shock, and a rapid thready pulse. Repeated hypodermic stimulation, and external heat to the body, with coffee and morphine, were necessary in this case. Strength returned gradually on the third day. There was no albumin in the urine.

Two strikingly similar cases have been reported by Dr. Henry D. Watson of Binghamton, N. Y. These occurred from two to three hours after an evening meal in a New York City hotel, where the cyanide polish was not used. Further investigation showed, however, that it had been in use at an up-state hotel where this group had taken lunch on the same day. Dr. Watson wrote to the New York State Health Department, Aug. 7, 1929, as follows:

Four of us were stopping at the ——— Hotel. We drove into New York City during the day, and for our dinner the first night we went to the ——— Hotel, which has a very high standing. About two and a half hours after walking back to our hotel, one of the party, my daughter, was taken suddenly and intensely ill with abdominal cramps, severe and persistent vomiting, with a very profuse diarrhea and tenesmus. She became exhausted, cold, covered with cold perspiration and almost listless, and was unable to get from the bed to the bathroom, with severe cramps in the legs and arms. About three quarters of an hour after her sickness began, another of the party, a dentist, was taken . . . in identically the same way except that his prostration was even more extreme; he became cyanotic and essentially unconscious but could be aroused to answer questions indifferently. Both of them had a very rapid, thready pulse. His seemed especially frequent and then developed a galloping rhythm. I called the assistant hotel physician, Dr. ——— and Dr. ——— to assist me and also a trained nurse. The sickness and vomiting continued until well toward morning, the dentist vomiting at intervals until the early part of the following day. They were in bed and kept very quiet for about five days, when we returned home. Dr. ——— (the dentist) had albuminuria for about four weeks following.

We could find no explanation for their sickness. It seemed to me it was chemical, it was so active and so severe. We attributed it, however, to food poisoning, Dr. ——— thinking it was more than likely the steak they ate as the steak was the only thing they had that the other two of us did not eat. The steak was served in a covered silver platter and had some sort of dressing which they said had very little or no taste. The steak was especially good. I went to the hotel and made all inquiries about their food to find the cause but nothing could be brought to light.

My attention was called to your recent health bulletin. I am so impressed with the utter parallelism between these two cases and the one reported in your bulletin that I now believe that in all probability it was cyanide poisoning.

The less severe cases were characterized by very active vomiting, usually with diarrhea, abdominal cramps and a sense of faintness, and often with prostration lasting from about six hours to a day or more. One individual reported indigestion, dizzy spells and exhaustion lasting several weeks after the acute attack. In another case a mild febrile reaction was observed, with the following range: twelve hours after the onset of symptoms, 100.6 F.; fifteen hours, 101.4; seventeen hours, 100.8; nineteen hours (with medication), 99.4; twenty-seven hours (after eight hours of sleep), 99. Here also the patient and only one other person were stricken out of a dinner party of four. The symptoms in the two developed simultaneously, six hours after eating.

Another person, whose work requires constant traveling, reported having suffered about twelve attacks during a year while stopping at hotels in various cities. On one of these occasions this usually robust woman was so ill that she feared impending death. Investigation revealed that at each hotel where she had suffered an attack the cyanide polish powder in question had been in use.

I know of about fifty cases occurring at hotels where this particular cyanide compound was used. There is every reason, moreover, to believe that many other persons have been similarly affected but the attacks have remained unreported. Quite recently press dispatches have indicated that a hundred or more cases of this kind have occurred in Chicago. So far as is known there have been no fatal cases, but a restudy is being made of certain fatal cases of food poisoning in which previous investigations failed to reveal botulism or to give any other satisfactory explanation.

### COMMENT

We were rather surprised to learn from three kitchen helpers who have handled the cyanide polish powder and its solution in two different hotels that they have been free from symptoms of any kind, except for a slight reddish discoloration of the hands. These men had been employed for several months and up to more than a year in this occupation.

It is of interest here to call attention to the unique case reported in 1908 by Collins and Martland[2] in which an Italian, after two years of brightening hotel silver with potassium cyanide solution, developed

2. Collins, Joseph; and Martland, H. S.: Disease of the Primary Motor Neurons Causing the Clinical Picture of Acute Anterior Poliomyelitis: The Result of Poisoning by Cyanide of Potassium, J. Nerv. & Ment. Dis. **35**: 417 (July) 1908.

symptoms resembling poliomyelitis. Here the worker kept his hands and forearms in the cyanide solution so much that they took on a deep red-brown. He was careful to keep his hands away from his nose and mouth, for otherwise he suffered dizzy spells.

Careful investigation of the method of handling the material in the Atlantic City hotel indicated that not all the silverware was treated daily. Each day some tarnished utensils were dipped in the cyanide solution. Individual utensils received such treatment about once a week, when tarnish had become unsightly. It is thought that those persons served with utensils at the first meal following the use of the polish were probably subjected to a maximum exposure. This is especially likely if the rinsing was carelessly done or if some of the polish remained in such places as the spouts of teapots.

Studies of this problem in New York City have revealed that a number of firms have manufactured and distributed silver polishes containing cyanide. In that city it has also been reported that a number of hotels and restaurants have made a practice of using sodium or potassium cyanide for silver cleaning. Trade preparations containing cyanide whose labels bear no poison sign have been widely advertised and used in hotels throughout New York State and elsewhere.

Care has been exercised to exclude from this study cases in which no definite connecting evidence of cyanide-containing polish could be discovered. The managers of most of the hotels studied have been very cooperative. A few have held back, perhaps fearing legal consequences if they admitted using a poisonous polish. In one instance, still under scrutiny, a group of cases of so-called food poisoning in a New York City hotel was attributed by Dr. Joseph Felsen to the spraying of arsenic on fruits and vegetables. In one individual of this group the presence of arsenic was reported in the feces and urine. The hotel, however, was using at the time the silver polish containing cyanide and this raises the question whether it or the arsenic was responsible. Dr. Felsen is also studying the matter of roach powders containing fluoride, apparently in common use in hotel pantries and elsewhere.

## REVIEW OF THE LITERATURE

In a recent report of a case of mild cyanide poisoning [3] the statement appears that "the literature reports very few cases of chronic or mild nonfatal cyanide poisoning. It is doubtful whether this ever occurs to any extent." Peterson, Haines and Webster [4] state that "the mortality in cases of cyanide-poisoning is very great." It would seem, however, that many mild cases with recovery are never recognized or reported. Such cases are probably more widespread than might be imagined.

Since 1844, twenty-five authors have reported cases in individuals or groups in which recovery has followed various types of cyanide poisoning. These reports cover a total of about 170 cases, not including those caused apparently by hotel silver polish which form the basis for this paper.

Recovery seems to depend on several factors, including the dosage and the method of entry into the body; also, if the poison is ingested, on whether the stomach is full or empty, and on whether vomiting or gastric lavage results in expulsion of the poison. Witthaus [5] states in regard to potassium cyanide poisoning: "Vomiting occurs in cases which are not rapidly fatal, particularly if the poison be taken with food or into a full stomach."

Peterson, Haines and Webster [4] state that "vomiting is more frequent in poisoning with potassium or sodium cyanide than with hydrocyanic acid." Alice Hamilton [6] includes a valuable chapter on cyanide poisoning in her book "Industrial Poisons in the United States."

Of the twenty-five authors reporting cases of cyanide poisoning in which recovery took place, twelve dealt with instances in which this poison was taken by mouth. These are naturally of more interest for comparative purposes than the other cases in which the cyanide entered the body through the skin or by inhalation. The twelve authors are Taylor,[7] Burman,[8] an unknown author, W.,[9] Arnold,[10] Gillibrand,[11] Baker,[12] Ord and Brockatt,[13] Shively,[14] Higgins,[15] Kolipinski,[16] Deak [17] and Blumenthal.[18] In the reports of these twelve authors one finds usually that either vomiting or prompt application of the stomach pump and persistent lavage removed the poison from the patient. These cases are therefore most like those apparently caused by hotel silver polish. However, the dosage in these suicidal and accidental cases is much greater than the minute quantities that might be taken into the mouth and stomach from a silver polish material remaining on hotel or restaurant silverware.

The following five authors report groups of from two to 100 cases of nonfatal cyanide poisoning, in which the material was not taken by mouth: Fühner,[19] Nolan,[20] Pavia,[21] Reed [22] and Ullmann.[23]

Single cases of cyanide poisoning with recovery, in which the material was not taken by mouth, have also been reported by Collins and Martland,[2] Parmenter,[3] De Tatham,[24] Martin,[25] Kobert,[26] Wilkes,[27] McKelway [28] and Tintemann.[29]

3. Parmenter, D. C.: Observations on Mild Cyanide Poisoning: Report of a Case, J. Indust. Hyg. **8:** 280 (June) 1926.
4. Peterson, F.; Haines, W. S., and Webster, R. W.: Legal Medicine and Toxicology, ed. 2, **2:** 674-685, 1926.
5. Witthaus, R. A.: Manual of Toxicology, ed. 2, 1911, p. 810.
6. Hamilton, Alice: Industrial Poisons in the United States, New York, Macmillan Company, 1925, pp. 344-353.
7. Taylor, A. S.: A Manual of Medical Jurisprudence, London, 1844, pp. 260-261; Philadelphia, 1880, p. 214.
8. Burman, W. M.: Recovery After Taking a Large Dose of Hydrocyanic Acid, Lancet **1:** 39 (Jan. 14) 1854.
9. W.: Case of Poisoning by Cyanide of Potassium, Boston M. & S. J. **74:** 311, 1866.
10. Arnold, A. B.: A Case of Poisoning by the Cyanide of Potassium, Am. J. M. Sc. **57:** 103, 1869.
11. Gillibrand, William: Case of Poisoning by Cyanide of Potassium, Lancet **2:** 223 (Aug. 12) 1876.
12. Baker, J. B.: A Case of Poisoning by Bitter Almonds, Brit. M. J. **2:** 12 (July 2) 1881.
13. Ord and Brockatt: Poisoning by Cyanide of Potassium: Recovery; Remarks, Lancet **2:** 1174 (Dec. 18) 1886.
14. Shively, H. L.: Attempted Suicide by Hydrocyanic Acid Poisoning: Recovery After the Ingestion of Half an Ounce of the Officinal Solution, Am. J. M. Sc., n. s., 1890, p. 47.
15. Higgins, F. W.: A Case of Poisoning by Cyanide of Potassium: Recovery, M. Rec. **11:** 687 (Dec. 5) 1891.
16. Kolipinski: Maryland M. J. **11:** 24, 1898.
17. Deak, S.: Pest. med.-chir. Presse, number 42, 1903, p. 1006.
18. Blumenthal, W.: Ein Fall von Vergiftung mit bitteren Mandeln, Deutsche med. Wchnschr., Sept. 4, 1919, p. 997.
19. Fühner, H.: Die Blausaurevergiftung und ihre Behandlung, Deutsche med. Wchnschr., July 31, 1919, p. 847.
20. Nolan, J. W.: Potassium Cyanide Poisoning, J. A. M. A. **50:** 365 (Feb. 1) 1908.
21. Pavia, G.: Il Lavoro **12:** 131, 1920.
22. Reed, C. J.: Chronic Poisoning from Cyanogen Chloride, J. Indust. Hyg. **2:** 140 (Aug.) 1920.
23. Ullmann, H.: Cyanide Poisoning from Shoe Cleanser, Deutsche med. Wchnschr. **52:** 451 (March 12) 1926; abstr. J. A. M. A. **86:** 1589 (May 15) 1926.
24. De Tatham, H.: Temporary Amaurosis from Exposure to the Vapor of Dilute Hydrocyanic Acid, Brit. M. J. **1:** 409 (March 1) 1884.
25. Martin, Alois: Ein Fall von chron. Siechthum hervorgerufen durch wiederholte Einathmung von Blausaure, Friedreich's Bl. f. Gerichtl. Med. **39:** 3, 1888.
26. Kobert: Lehrbuch der Intoxikationen, Stuttgart, 1902, p. 836.
27. Wilkes, G.: Poisoning by Prussic Acid, Lancet **2:** 1058 (Oct. 8) 1904.
28. McKelway, J. I.: Three Cases of Poisoning by Potassium Cyanide, Am. J. M. Sc., April, 1905, p. 684.
29. Tintemann: Zur Kasuistik der Blausaurevergiftung, Deutsche med. Wchnschr., Oct. 18, 1906, p. 1703.

## CONCLUSION

So far it has not been possible to bring direct and conclusive evidence in regard to the etiology of the cases here reported as apparently due to silver polish. A survey of the literature of nonfatal cyanide poisoning would indicate that the symptomatology of these cases is in accord with what might be expected. Possibly future experimental investigation on suitable animals may be of value in interpreting the clinical histories. It is felt, however, that the epidemiologic and clinical evidence is ample to warrant widespread regulatory action by health authorities for the purpose of protecting the public from the careless handling of products containing highly poisonous cyanide compounds which are used to clean eating utensils in public places.

The first official action in this matter was probably that of the New York State Department of Agriculture and Markets, which in July, 1928, analyzed the polish in question to determine whether or not it contained cyanide. Shortly after, in conjunction with the state board of pharmacy, further action led to the appearance of the word "Poison" in red ink on the labels for a portion of the product sold in New York State. There then followed the warning in *Health News* in January, 1929.[1] So far as is known, the department of health of the city of Newark, N. J., took the first prohibitory action when, June 10, 1929, it placed a ban on the use in that city of any poisonous chemical for the cleaning of silverware or utensils used for food. At that time attention was called to the presence of cyanide in cleaning mixtures. A further forcible warning appeared in the New York State *Health News*, July 22, 1929. A similar warning was given by the New Jersey State Health Department, August 1, and has also been issued by the city health departments of New York, Albany, N. Y. (at the request of the county medical society), Atlantic City and Chicago.

The Public Health Council of the State of New York, Nov. 6, 1929, amended the state sanitary code,[30] adding thereto the following new regulation, effective Dec. 1, 1929:

> *Poisonous substances for polishing kitchenware or silverware prohibited.* Any polish or article or substance containing any cyanide preparation or other poison shall not be used in any hotel, club, restaurant or public eating place for the cleansing of nickel, copper, silverware or silver plated ware or other articles or utensils used for the service or preparation of food or foodstuffs.

Dr. Shirley W. Wynne, health commissioner of New York City, collaborating with the state public health council, greatly assisted in the investigation and this new state regulation has been added in identical form to the sanitary code of New York City.

As pointed out in an editorial in THE JOURNAL:[31]

> In modern life new customs, new machineries, new tastes develop with startling rapidity. Manufacturers promote and our people use new products with amazing avidity and with utter disregard for hazards to health and life. The public has learned to depend on authorities for the responsibility for its health and safety. Only too often the thing we call progress moves on before authority can investigate or grant assurance. Apparently catastrophe and death alone can make mankind even hesitate in its headlong pace.

I feel that the primary purpose of this paper is to bring to the attention of physicians in practice the clinical picture of what may be considered acute nonfatal cyanide poisoning, as a possible aid in the differential diagnosis of attacks of food poisoning of obscure origin.

30. Health News, New York State Health Department, Nov. 18, 1929.
31. Increasing Hazards from Poisonous Gases, editorial, J. A. M. A. **93**: 461 (Aug. 10) 1929.

## SUMMARY

1. During 1928 and 1929, certain widely separated groups of cases of acute and severe gastro-enteritis have, on epidemiologic investigation, indicated that a particular cyanide silver polish was their cause.

2. The usual preliminary clinical diagnosis in nearly each instance has been either "ptomaine poisoning" or "food poisoning."

3. With the removal of the silver polish in question from hotel pantries and restaurants there has been reported a cessation of complaints of such cases.

4. Although definite and conclusive evidence of the etiology of the cases reported is perhaps not entirely possible, further studies are indicated.

5. The health department of Newark, N. J., has prohibited the use of poisonous chemicals for the cleaning of silverware in that city. The sanitary codes of New York State and New York City have been amended to prohibit the use, in any public eating place within the state, of cyanide or other poisonous preparations for polishing kitchenware or silverware.

6. This report is made for the purpose of assisting physicians in practice in the differential diagnosis of attacks of food poisoning of obscure origin.

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# THE AMELIORATION OF MENTAL DISEASE BY INFLUENZA *

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That any somatic disease may influence any mental disease favorably is a matter of great theoretical and practical importance. The malarial treatment of paresis is a concrete example of its clinical utilization.[1] But its theoretical implications extend far into the complicated questions of the interrelations of psychic and somatic disease and touch intimately on the important problem of reversibility.

That it is a fact of repeated observation that somatic disease may favorably affect preexisting psychotic manifestations should not require much evidence here. Pinel [2] enumerates various disorders "operating to produce a permanency of recovery." Jacobi [3] mentioned it in 1844. Koster [4] wrote an inaugural dissertation on it in 1848 at Bonn; and the literature contains fully two score contributions, case reports and discussions. Back of all this, of course, is the theory, presumably based on many observations, of traumatic or shock treatment.

But the precise delimitation of the observed "fact" and the present status of the data relative to the problem merit recapitulation.

## DELIMITATION

Symptom manifestations of mental illness, i. e., "attacks of mental disease," are sometimes (1) precipitated by somatic infectious disease, (2) aggravated by somatic infectious disease or (3) ameliorated by somatic infectious disease. As far as 1 and 2 are concerned, all types of mental disease and all types of infections are

* Read before the New York Neurological Society, March 5, 1929.

1. George Savage said, more than fifty years ago, that while the fact that sudden shocks sometimes cured "insanity" had led to great abuses, he was "inclined to think that the rough treatment . . . cured some cases that nowadays remain uncured" (Practitioner **16**: 449, 1876).
2. Pinel: Insanity, English edition, 1806, p. 281.
3. Jacobi: Hauptformen der Seelenstörungen.
4. Koster: Quomodo in insaniam valeat febris intermittens.

included. For example, it is known that influenza may precipitate or aggravate all known types of mental disease pictures.

Individual + Influenza → { Schizophrenia, Deliria, Mania, Melancholia, etc.

It is also known that schizophrenia, for example, may be provoked into external expression by many agents including any and all infectious diseases.

Individual + { Influenza, Typhoid, Trauma, Disappointment, etc. } → Schizophrenia

In regard to the ameliorative process, there is evidence in the literature [5] that various of these mental disease pictures

Melancholia, mania, confusional psychosis, hebephrenia, catatonia, paranoia, epilepsy, idiocy, paresis

may be favorably affected by one of these infections:

Typhoid,[6] typhus fever,[5] recurrent fever,[7] scarlet fever,[8] rheumatic fever,[9] smallpox,[5] angina,[10] pneumonia,[5] pleurisy,[11] abscesses,[5] erysipelas,[12] diphtheria,[13] measles,[12] cholera,[14] malaria,[5] osteomyelitis [15] and influenza.

My own particular interest in this field has been influenza, and this study deals particularly with specific instances of its ameliorative effects on mental diseases. Its deleterious effects are so many and so well known that this should make more interesting its function in the opposite direction. I shall present briefly: (1) a review of the literature on influenzal amelioration of mental disease; (2) reports of cases of my own observation; (3) an analysis of the cases, and (4) the theoretical implications of the phenomenon of amelioration *ex incentibus*.

5. Fiedler, A.: Ueber den Einfluss fieberhafter Krankheiten auf Psychosen (The Effect of Febrile Diseases on Insanity), Deutsches Arch. f. klin. Med. **26:** 275-294 (Aug. 3) 1880. Lehmann, George: Zur Frage ueber den Guenstigen Einfluss acuter Krankheiten auf den Verlauf von Geistesstoerungen (The Favorable Effect of Acute Diseases on Insanity), Allg. Ztsch. f. Psychiat. **43:** 200-210, 1887.

6. Nasse, W.: Typhus und Irresein (Abdominal Typhoid Fever and Insanity), Allg. Ztschr. f. Psychiat. **26:** 713-714, 1869. Fiedler and Lehmann (footnote 5). Rath: Ueber eine Typhus Epidemie in der provinzial Irrenanstalt zu Osnabrueck (Notes on a Typhoid Epidemic at the County Insane Asylum at Oznabrueck), Allg. Ztschr. f. Psychiat. **41:** 326-338, 1885. Bach: Typhus bei Irren (Typhoid Fever and Insanity), Notizen f. prakt. Aerzte (Graevell) **8:** 601-602, 1855. Gaye: Schilderung eines in der Irrenanstalt bei Schleswig in den Jahren 1846 und 1847 epidemisch aufgetretenen gastrischen und typhoiden Fiebers (Descriptions of an Epidemic of Gastro-Typhoid Fever in the Insane Asylum at Schleswig During 1846-1847), Allg. Ztschr. f. Psychiat. **9:** 173-199, 1852.

7. Nasse, W.: Neue Beobachtungen ueber den Einfluss des Wechselfiebers auf das Irresein (New Observations on the Effect of Intermittent Fever on Insanity), Allg. Ztschr. f. Psychiat. **21:** 1-46, 1864. Fiedler and Lehmann (footnote 5).

8. Fiedler and Lehmann (footnote 5). Keay, J.: A Case of Acute Mania: Scarlet Fever: Recovery, J. Ment. Sc. **42:** 267-275, 1896.

9. Sander, A.: Rheumatismus und Geisteskrankheit (Rheumatism and Insanity), Allg. Ztschr. f. Psychiat. **20:** 214-228, 1863. Fiedler and Lehmann (footnote 5).

10. Fiedler and Lehmann (footnote 5). Damaye, Henri: Affections mentales guéris par une grippe et par une angine pultacée (Mental Affections Cured by Influenza and Pulpy Angina), Progrès méd. **34:** 501-502 (Dec. 6) 1919.

11. Fiedler and Lehmann (footnote 5). Willerding, W.: Guenstiger Einflusse fieberhafter krankheiten auf Psychosen: Heilung einer Manie in Folge einer Pleuritis (Favorable Effect of Febrile Diseases on Psychosis: Recovery from Insanity Due to Pleuritis), Allg. Ztschr. f. Psychiat. **46:** 606-614, 1889-1890.

12. Sponholz, Jun: Ueber den Einfluss somatischer Affectionen auf den Verlauf der Psychosen (The Action of Somatic Diseases on Psychoses), Allg. Ztschr. f. Psychiat. **30:** 1-11, 1874. Fiedler and Lehmann (footnote 5).

13. Fiedler and Lehmann (footnote 5). Schuetze, E.: Heilung einer Manie unter dem Einflusse von Rachendiphtherie (Insanity Cured by Diphtheria), Arch. f. Psychiat. **20:** 230-242, 1889.

14. Sponholz (footnote 12); Sponholz, Jun: Die cholera asiatica in der Irren-Heil und Pflegeanstalt zu Sorau (Asiatic Cholera at the Sorau Insane Asylum), Allg. Ztschr. f. Psychiat. **31:** 228-234, 1875. Fiedler and Lehmann (footnote 5).

15. Stenger, C.: Beitrag zur Heilung chronischer Psychosen durch profuse Eiterungen (The Cure of Chronic Psychosis Through Profuse Suppurations), Allg. Ztschr. f. Psychiat. **37:** 724-729, 1881.

REVIEW OF THE LITERATURE

The 1889-1891 epidemic of influenza brought forth a great number of contributions dealing with its psychiatric aspects. Only five of these, so far as I could find, present actual case reports of amelioration, although it is occasionally mentioned as occurring by several others.

1. Gauster,[16] an asylum superintendent in Vienna, in the course of a general report describes two cases: one a recovery, one a remission. He says:

> A severe melancholia completely recovered under the influence of severe influenza; the patient was transferred—mentally restored—to a general hospital for treatment of a pleurisy which developed.
>
> A case of chronic delusional psychosis showed a tendency toward improvement during an influenzal attack, and recovery seemed hopeful, but a severe relapse occurred shortly.

2. Helweg,[17] a Danish observer, reported two cases of long-standing "puerperal psychosis," one cured, one improved by attacks of influenza. One woman was 32; her psychosis had begun three years previously, after a delivery and had progressed through delusional and hallucinatory stages into "dementia"; but after an attack of influenza in February, 1889, complicated by pneumonia, she improved and was discharged well.

The other patient was 28 and had been ill for four years with a postpuerperal psychosis; she, too, had influenza and pneumonia and was mentally improved afterward to the point of being capable of some work in the institution, although still "slightly idiotic."

3. Metz [18] describes in detail a dramatic case in which a bricklayer, aged 32, of negative family history but typical schizoid makeup ("reserved," "touchy"), became increasingly restless, suspicious, deluded and excited, accusing his wife and others, arming himself and threatening to shoot various persons. After eight months this led to his commitment, Feb. 21, 1889. In the institution he became increasingly disturbed, suspicious, deluded, hallucinated and aggressive, attacking another patient and requiring restraint (a typical picture of excited schizophrenia).

January 13, he developed typical influenza, and was ill for four days, his temperature never exceeding 39.4 C. (102.9 F.). January 17, he wrote an exceedingly sensible letter to his wife acknowledging his illness and his delusions, and agreeing to stay longer for observation. Thereafter he appeared to be perfectly well mentally—free from delusions, hallucinations and emotional disturbances—and was dismissed entirely well Feb. 8, 1890.

4. From the epidemic in Greece in 1898 comes the remarkable case reported by Coveos.[19] A Greek boy, aged 10, had so-called epilepsy, which had begun when he was 3, and was having two attacks every other day. The convulsions had been limited to spasm of the face and neck muscles with drooling followed by severe headaches. He also had a speech defect. The family and past history were negative. The "signs of idiocy were clear from the sixth year on," and increased so that he was completely idiotic at 8, and "so demented that he ate the dung of man and animals."

16. Gauster, Moriz: Die Influenza-Epidemie, 1889-1890, in der Landes-Irrenanstalt in Wien, und ihre Einwirkung auf die Psychopathien, Wien. med. Presse **32:** 177, 1891.

17. Helweg, K.: Influenzaens Virkninger i en Sindssygeanstalt, saerligt dens Sektions resultater (Action of Influenza on Insanity According to Autopsy Findings), Hospitalstidende **8:** 729-745 (July 16) 1890.

18. Metz, M.: Heilung einer Paranoia nach Influenza (Paranoia Cured by Influenza), Neurol. Centralbl. **9:** 201-204 (April 1) 1890.

19. Coveos, G. L.: Mehrjahrige Epilepsie und Idiotismus voellig Geheilt nach einem Anfall schwerer Influenza, Allg. Wien. med. Ztg. **45:** 383 (Aug.) 1900.

He had a severe attack of influenza, lasting thirty days. The author remarks that the parents hoped he would die. He began to recover from the influenza and simultaneously from his idiocy and epilepsy. He returned to school and made better grades than his healthy brother and even than many others of his age.

This case gave rise to considerable discussion at one time and Jean Foustenaous, editor of *Grèce médicale*, discussed it in his journal.[20] He considers it a case of gross brain disease, possibly hydrocephalic encephalitic, hemorrhagic or neoplastic. He favors the first, but he does not make it clear wherein this favors the improvement.

5. The pandemic of 1918 brought forth a few additional and better recorded instances. Damaye,[21] for example, reported three cases. In a woman, aged 28, the schizophrenic[22] picture developed after her husband's death in the war and lasted a year prior to an attack of influenza in September, 1918, of ten days' duration. As the influenza subsided, her excitement did likewise, and she was discharged cured Oct. 30, 1918.

Another woman, aged 27, had a manic-depressive psychosis and a depressed phase with agitation, anxiety, and ideas of persecution and suicide. Exactly one year after admission, i. e., in September, 1918, she had influenza and bronchopneumonia, her temperature reaching 40 C. (104 F.). In the course of this illness her delusional ideas faded and disappeared, and she recovered completely (in about two weeks).

Damaye's third patient was a youth, aged 20, who presented a schizophrenic picture[23] without much question, unchanged after eighteen months. During the epidemic in the fall he contracted influenza (October 10) of the gastro-intestinal type, with a fever of 37.5 to 38 C. (99.5 to 100.4 F.); the duration of the illness was not stated. Following this disturbance, however, his mental state improved rapidly, the delirium disappeared, and by November 1 he was entirely well.[24]

6. Latapie[25] also reported two cases, one cured, one only provoked to remission. The cure occurred in a married woman, aged 30, admitted to the asylum in January, 1918, in maniacal excitement with incoherence, confusion and delusions of persecution, which continued fairly constantly until November, when these symptoms disappeared entirely during an attack of influenza. During December she assisted in the care of other influenza patients and was dismissed in January, 1919, well.

The remission occurred in a married woman, aged 35, who entered the asylum in August, 1917, presenting such schizophrenic stigmas as hallucinations, and delusions of having two stomachs, of being controlled by electricity, and of being forced to talk against her will. During an attack of influenza in November, 1918, she appeared transformed, relinquished her delusions and hallucinations and seemed normal only until the influenza abated, when the former picture reappeared.

7. Moreira[26] observed "ameliorations of mental disease both temporary and permanent after influenza but no complete cures." One case is cited, briefly, of a man, aged 33, with a manic picture of seven months' duration, who improved after an influenzal attack.

8. Numerous writers have cited instances of the improvement or cure of epileptic manifestations by influenza specifically, e. g., Maillard and Brune[27] and Damaye,[28] and a case is included in a report by Ebaugh[29] of a white child, aged 9, ill nourished, listless and stupid, who had had convulsions since the age of 2, and numerous acute infections and diseases. The convulsions stopped after an attack of influenza.

Dr. David F. Weeks of the New Jersey hospital, Dr. W. T. Shanahan of the New York Hospital, Dr. A. S. Hubbard of the Kansas Hospital, and Dr. H. B. Carriel of the Illinois Hospital for Epileptics observed numerous instances of the remission of attacks during the acute influenzal illness, as indicated by personal communications to me, reported elsewhere.[30]

Two cases were discovered and noted by Leledy,[31] the details of which I have been unable to secure. One was a personal observation (case LXXXIII), the other a report of Jouriac[32] from the Blois (insane) Hospital (observation XCIX).

### REPORT OF AUTHOR'S CASES

The following cases have come under my own observation:

CASE 1.—*Epilepsy, cure.*[30] A school boy, aged 14, white, with a father subject to temper tantrums and a mother to chronic headaches, began to have epileptiform seizures at the rate of about one a month in August, 1916. In September, 1918, he contracted severe influenza, in the course of which he had three or four more seizures, and thereafter none. He was lost sight of, however, within the year.

CASE 2.—*Epileptic psychosis, remission.*[30] A woman, aged 30, confined to an institution for epilepsy, with much pointless logorrhea and superficial hyperactivity, was severely ill with influenza for most of two weeks, recovering gradually. During the period of high fever she seemed entirely altered in personality—quiet, intelligent and emotionally responsive. This gave way to her former state as the physical illness declined.

CASE 3.—*Epilepsy, improvement and remission.* Six patients at Craig Colony had fewer seizures during the influenza month (six weeks) than their usual wont; seven patients had fewer attacks a month for the following nine months. These cases were reported to me personally by Dr. Shanahan.

CASE 4.—*Chronic mania, remission.* A very disturbed old offender at the Kansas State Hospital for the Criminal Insane, seen with Dr. Sherman Axford, had been in practically the same condition of excitement and destructive hyperactivity for eight years. He talked incessantly, until voiceless in fact, tore up his bedding and kept constantly on the move. During an attack of influenza in 1918, during which he was severely ill, his excitement completely subsided, and he conversed quietly and sensibly with the physician and nurse, and manifested none of his antics. On recovery from the infection, however, he resumed his former mental status. Six months later a similar remission occurred during a streptococcic infection of his hand. Since then he has slowly and very slightly improved.

20. Foustenaous, Jean: Grèce méd., 1900, number 7.

21. Damaye, Henri: Troubles mentaux occasionnés par la grippe: troubles mentauz guéris par l'infection grippale (Insanity Due to Influenza: Insanity Cured by Influenzal Infection), Ann. méd.-psychol. **11:** 215-220 (May) 1919; Damaye (footnote 10, second reference).

22. Damaye describes her as having "mystical, melancholy and grandiose delusions, refusing food, assuming obscene postures, blaspheming, alternately singing, weeping and laughing—at times silent and immovable, often agitated, violent and incoherent."

23. Damaye describes the condition thus: "Echolalia, excitement, hears threatening voices, insults everybody, threatening attitude, periods of excitement, alternating with periods of complete indifference, idleness, wandering attention."

24. The author states that the patient could remember his behavior of the previous eighteen months; he also states that the boy's physical condition had begun to improve five months prior to the influenza without having markedly affected the mental state.

25. Latapie: Quelques remarques à propos de l'épidémie de grippe de 1918—et psychoses favorablement influencé es par la grippe (Some Remarks on the Influenza Epidemic of 1918—and Insanity Favorably Influenced by It), Ann. méd.-psychol. **10:** 350-355 (Sept.) 1919.

26. Moreira: Arch. brasil. de med., May, 1919.

27. Maillard and Brune: Grippe et epilepsie, Presse méd. **27:** 70 (Feb. 10) 1919.

28. Damaye (footnote 10).

29. Ebaugh, F. G.: Mental Health Problems in School Children, Am. J. Dis. Child. **28:** 265 (Sept.) 1924.

30. Menninger, K. A.: Influenza and Epilepsy, Am. J. M. Sc. **161:** 884 (June) 1921.

31. Lelēdy, Albert: The Grippe and Mental Alienation, Paris thesis, 1891.

32. Jouriac, quoted by Leledy (footnote 31).

CASE 5.—*Migraine, cured.* H. W., a graduate male nurse, aged 35, had suffered from severe migraine attacks every two to six weeks since his earliest recollection, and had missed much school on account of them. He had no visual symptoms, but typical nausea, prostration, vomiting and cessation were present. His mother and only sister were similarly affected. He had no children. In 1918, during the pandemic, he had a moderately severe attack of influenza. Thereafter he never had another headache (ten years). Once only he had a gastro-intestinal upset with headache, at Thanksgiving time, but not typical migraine. He does not know of any other changes in himself.

CASE 6.—*Idiocy, improvement.* This remarkable case was the occasion of my first interest in this subject, ten years ago. A child, aged 6, the daughter of college bred parents of bad heredity from the psychopathic standpoint, was admitted to a state school for the feebleminded at the age of 4, physically normal but in point of intelligence an idiot, with a mental age of 10 months. Many details of her birth history and early infancy are recorded in a previous report of the case, together with psychiatric and psychologic examination data which will be passed over here.[33] Fourteen months after admission, at the age of 5, she had severe influenza plus bronchopneumonia, plus empyema, with a long convalescence. During this convalescence she manifested marked evidences of mental awakening (detailed in the previous report). Her automatic purposeless movements disappeared, she took an interest in things, became tidy, learned to dress and feed herself, and learned kindergarten participation. In six months her intelligence quotient had gone from 27 to 40; a year later it was 52, two years later 68. Her mental age, in other words, developed more rapidly than her chronological age—and at 8 years (1922) she had reached a mental age of nearly 6 and was doing first grade work.[34]

A report of her development since 1922 is not available.

I myself have not observed improvement in any cases of schizophrenia or psychoneurosis or melancholia after influenzal attacks.

An analysis of the foregoing series of cases is presented in the accompanying tabulation.

*Analysis of Cases of Postinfluenzal Amelioration*

| | | | |
|---|---|---|---|
| Sex: | | Presumptive or stated diagnoses: | |
| Males | 9 | Mania | 3 |
| Females | 7 | Melancholia | 2 |
| Unknown | 2 | Probably schizophrenia | 7 |
| Duration of psychosis: | | Organic brain disease | 2 |
| 1-11 years | 7 | Epilepsy | 3 |
| 2-4 years | 3 | Migraine | 1 |
| 5-15 years | 6 | Presumptive or stated diagnoses of cases reported "cured": | |
| Unknown | 2 | Mania | 1 |
| Result: | | Melancholia | 2 |
| Cured | 11 | Schizophrenia | 4 |
| Improved | 3 | Organic brain disease | 1 |
| Remission | 4 | Epilepsy | 2 |
| | | Migraine | 1 |

From so small a series it would be unsafe to draw any statistical conclusions. It is apparent, however, that both sexes, various syndromes, and illness of variable duration are included.

## THEORETICAL IMPLICATIONS

Of the many intriguing speculations which the establishment of this phenomenon makes possible, I would address myself to three:

1. What are the mechanisms of the process?

(*a*) Chemical theory. The chemical theory, as it might be called, holds that the result is achieved by the neutralization of primary toxins by the antibodies of secondary toxins. Marinesco, Latapie, Alfred Gordon and others take this view.

(*b*) Physical theory. Another explanation, on an anatomic basis, is advanced by Courbon.[35] In a discussion none too clear he conceives of healthy "psychic" neurons existing beside diseased neurons and inhibited by the latter, and suggests that these inhibitions may be removed through a further injury to the diseased neurons, which paralyzes them and permits the healthy neurons once more to act normally.

(*c*) Humoral theory. A so-called humoral theory has been advanced by Leroy, but I can't understand it. Various suggestions of metabolic changes have been made, without clear evidence of value.

(*d*) Catalytic theory. From the purely mechanistic standpoint, I venture to suggest that the process closely parallels the phenomenon of catalysis. An enzyme or other catalytic agent, it will be recalled, acts to accelerate certain reactions in a direction in which they were already slowly moving. No change in energy relations takes place, and the catalytic agent does not enter into the reaction. (The influenza, for example, comes and goes—leaving or taking nothing.) Furthermore, the same catalytic agent which promotes a reaction in a certain direction may effect the reversibility of that reaction, i. e., may promote it in exactly the opposite direction, under certain environmental conditions. Ptyalin, for example, which induces starch rapidly to become sugar, may convert sugar into starch under certain circumstances of temperature.

Now this is precisely what seems to occur in the problem under consideration. Infectious disease is known to hasten the disintegrative processes and tendencies of certain personalities, occasionally to the point of breaking, i. e., of breaking out, as it were. Just how it accomplishes this we really do not know. It is inadequate to refer to "toxic effects on the cerebrum" because in the first place we don't know exactly how the cerebrum is affected by these toxins, and, secondly, we don't know exactly what is meant by "toxic effects."

What we do know is that a certain mass reaction occasionally follows, and much less frequently precisely the opposite reaction takes place. This, I submit, is exactly parallel to catalysis.

2. What are the psychodynamics involved?

The psychologic factors are probably identical with those which are operative in the post-traumatic cures with which we are familiar under various guises. Recoveries following accidents, hemorrhages, parturition, suicidal attempts, legal crises, surgical operations, spinal serum injections,[36] Kaufmann's "ueberrumpelung" cure, and so on, are probably all to be regarded as accomplishing a reconcilation of the distraught and warring processes of the unconscious with a declaration of peace. The gratification of Freud's recently postulated death instinct, the assuaging of the demand for propitiatory suffering from an unconscious sense of guilt, the threat to the extinction of the ego—these and many other possibilities appear which could be chosen between only by individual and penetrative case study.

In general, what must occur is a redistribution of libidinous streams, some of which are released from investment in unpropitious directions.

33. Menninger, K. A.: Influenza and Hypophrenia, J. A. M. A. **75**: 1044-1051 (Oct. 16) 1920.

34. Another feebleminded child recently under our observation, with a chronological age of 8, a mental age of 5.6 and an intelligence quotient of 63, was discharged from the Southard School in September, 1928, to his mother. In November he had influenza and was reported distinctly improved thereafter. According to the mother, he complained of a headache one day and on the noon of the following day had a fever which reached 103. He was restless and ill for several days with this fever and increasing cough. For a few days she thought he was getting pneumonia. He was in bed altogether ten days. Following this, she says, he did much better school work, talked better (by which she means more clearly as he had always had a marked speech defect), and seemed more alert. Apparently he was doing passable 2 B work.

35. Courbon, P. C.: The Remission of Mental Disorders Just Before Intercurrent Somatic Diseases, Rev. neurol. **30**: 237 (March) 1923.

36. Kubitschek, Paul; and Carmichael, F. A.: Experimental Aseptic Meningitis, Am. J. Psychiat. **8**: 97-135 (July) 1928.

A corollary problem is raised, however, which may throw light on the general principles involved. Not infrequently this phenomenon is observed: a patient with a chronic or recurrent physical ailment, but free from psychic distress, presents himself at a medical or surgical clinic for treatment of his condition. Successful removal of the disorder is then promptly followed by acute mental illness. A patient of mine recently submitted himself to an operation for a duodenal ulcer of ten years' standing. It had pained him constantly, but not seriously enough to prevent his success in a business career. Promptly after the operation he developed a melancholia which has now persisted two years, with complete incapacitation.

In these cases the removal of the pain—the punishment, the attrition—results in the appearance of a previously restrained flood of self-attacks of another sort. This is precisely the reverse of the phenomenon of amelioration of mental disease by infectious somatic disease.

3. Finally, I would mention the implications of these data as to the essential nature of schizophrenia, and particularly as to its reversibility. Apparently the plurality of reported cases presented schizophrenic pictures, but even if only one did so, and clearly, the contention that the schizophrenic process is a reversible one would receive valuable support.[37] The theory of catalytic action proposed bears especially on this hypothesis. All of the pragmatic consequences depend on it. What are the real conditions of reversible action in schizophrenia? To date I think we know none of them definitely.

The Menninger Clinic.

# Council on Pharmacy and Chemistry

## NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

**BUTESIN PICRATE** (See New and Nonofficial Remedies, 1929, p. 54).

The following dosage form has been accepted:

*Butesin Picrate Eye Ointment:* 1 per cent of butesin picrate in a petrolatum base.

**PNEUMOCOCCUS ANTIBODY SOLUTION, TYPES I, II AND III COMBINED** (See New and Nonofficial Remedies, 1929, p. 346).

H. K. Mulford Company, Philadelphia.

*Pneumococcus Antibody Solution, Types I, II and III Combined-Mulford* (see New and Nonofficial Remedies, 1929, p. 346).—Also marketed in packages (M48-240) of four 50 cc. double-ended vials with one complete intravenous outfit.

**DEXTROSE** (See New and Nonofficial Remedies, 1929, p. 240).

The following dosage form has been accepted:

*Ampoules Dextrose (d-Glucose) 10 Gm., 20 cc.:* Each ampule contains dextrose (*d*-glucose) 10 Gm., in distilled water, to make 20 cc.

Prepared by the Lakeside Laboratories, Inc., Milwaukee, Wis. No U. S. patent or trademark.

**SODIUM CACODYLATE** (See New and Nonofficial Remedies, 1929, p. 73).

The following dosage form has been accepted:

*Ampoule Sodium Cacodylate 0.243 Gm. (3¾ grains), 5 cc.*

Prepared by the Lakeside Laboratories, Inc., Milwaukee, Wis.

37. Menninger, K. A.: Reversible Schizophrenia, Am. J. Psychiat. 1: 573 (April) 1922.

## REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, Secretary.

### EPHEDROL WITH ETHYL MORPHINE HYDROCHLORIDE (LILLY) NOT ACCEPTABLE FOR N. N. R.

Ephedrol with Ethyl Morphine Hydrochloride was originally presented for consideration by the Council as Ephedrol. Ephedrol, as defined by Eli Lilly & Co., the manufacturer, is: "A Palatable, Sedative Expectorant, Distinctive for Its Content of Ma Huang." The composition is stated, thus:

| | Fluidounce | 100 Cc. |
|---|---|---|
| "Ma Huang | 30 grs. | 6.6 Gm. |
| Potassium Guaiacol Sulphonate | 6 grs. | 1.75 Gm. |
| Ethyl Morphine Hydrochloride | ¼ gr. | 0.055 Gm. |
| Syrup Squill | 30 mins. | 6.2 cc. |
| Syrup Tolu and Menthol | q. s. | |
| Contains alcohol 5 per cent." | | |

This formula shows that "Ephedrol" is a polypharmacal cough mixture which may scatter its shot over a wide territory but whose chief active ingredient is ethylmorphine. The dosage advised (up to 2 fluidrachms every two hours or 2 fluidounces per day) may give the patient half a grain of ethylmorphine daily, or twice the U. S. P. single average dose. With such an amount of the opiate, the rôle of the other ingredients becomes practically insignificant. "Ephedrol" may justly be characterized as a pernicious atavism and as an abuse of the popular interest in a modern invention, ephedrine. It is an example of the discredited practice of disguising an opiate by another name. It is a product of which the manufacturers should not feel proud.

"Ephedrol" is not acceptable for New and Nonofficial Remedies because it is an unscientific mixture which disguises an opiate under a misleading coined name.

The foregoing report was sent to Eli Lilly & Co., and in reply, the firm explained:

"The management added Ephedrol to the list in response to numerous suggestions from salesmen that some such formula would prove popular with physicians, without taking this matter up with Dr. Clowes and our research staff."

"We have now issued instructions to immediately discontinue further manufacture so that as soon as present limited stocks in the hands of the trade are exhausted, this preparation will disappear from the market. All sales effort has already been discontinued."

Since the preparation was to be abandoned, according to this letter, the Council's report was not published.

Two months later (June, 1928) Eli Lilly & Co. reopened the matter, chiefly on the following grounds:

"The Council had two principal objections, first, that the name 'Ephedrol' was misleading in that it disguised an opiate under another name; and, second, that the amount of ephedrine was not sufficient to exert a therapeutic effect.

"As regards the first objection, we now expect to market the Ephedrol under the title 'Ephedrol with Ethyl Morphine Hydrochloride.' The new labels accompany this letter and we feel certain that the Council will be no longer of the opinion that the title is misleading.

"As regards the second objection, however; we have done a considerable amount of pharmacological work to determine the effect of ephedrine in combination with ethyl morphine hydrochloride, and also to determine what would be the best proportion of these two drugs. After receipt of your letter this work was further pursued and shows conclusively that ethyl morphine hydrochloride has a marked constricting effect on the bronchi, and further that this constricting effect can be entirely overcome by the administration of a suitable dose of ephedrine sulphate. . . .

"The pharmacological work has demonstrated that the criticism of the Council was well taken, in that we found that the dose of ephedrine sulphate in our Ephedrol should be approximately twice what the original formula contained. You will note, therefore, on the new labels that the amount of Ma Huang has been doubled over that of the previous formula."

The firm concludes:

"We have no actual clinical data to support the pharmacological data, but believe the pharmacological data is conclusive enough to anticipate what might happen when the preparation is used clinically.

"After reading this letter and looking over the labels, the new literature and the charts which accompany, we feel that the Council will no longer object to our again placing this preparation on the market, and this we expect to do soon."

The Council's referee examined the data and records submitted by the firm and reported that the experimental methods appeared to require further checking; and that their application

to the clinical conditions was totally unjustified, concluding as follows: However, whether bronchial or not, these reactions (to ethylmorphine) can have no therapeutic significance; for they are produced by the intravenous injection of rather large doses, and when the injection is not fatal, they have been found to disappear spontaneously within five to seven minutes after the injection. In other words, they are not due to the presence of the drug in the body (for this would persist for hours), but they are a phenomenon of the acute shocklike reaction to intravenous injection, which is not peculiar to ethylmorphine but occurs with so many substances. It is interesting that ephedrine appears to protect against this reaction, but it is not surprising, for epinephrine has long been used for this purpose.

The Council held that the pharmacologic data therefore do not prove, and do not even give any good reason to suppose, that therapeutic doses of ethylmorphine, given by mouth, produce any bronchial constriction; still less, of course, do they justify the presumption of a deleterious degree of bronchoconstriction. So far as the Council's referee is aware, clinicians have not felt troubled by any such effect. Incidentally, the referee would point out that the clinical enthusiasm over Ephedrol, which the Lilly company reports, was based on a dosage of ephedra which they themselves now consider inefficient; which merely illustrates the old experience that a new opiate cough mixture always finds an enthusiastic reception. In brief, then, the evidence that there is a special need for routine combination of ephedra with diethylmorphine, to neutralize bronchoconstriction, is unconvincing. There may be special cases when it may be desirable to combine the two drugs for other purposes, to meet special indications; but these are apt to vary so widely for different conditions for different patients and from day to day that a routine mixture would be undesirable; it would be better to give ephedrine, as a syrup of ephedra if one prefers, and ethylmorphine separately so as to be able to vary the dosage and frequency as occasion arises. Incidentally, a proprietary name like "Ephedrol," with or without addition, would not be admissible for mere pharmaceutic preparations or mixtures of the now well known drug ephedra.

The foregoing was transmitted to Eli Lilly & Co., but no further action was taken since the article was not on the market. The firm replied (September, 1928) as follows:

"Still feeling that Ephedrol with Ethyl Morphine Hydrochloride will give results when used as indicated, we have decided to continue our pharmacological work to see whether or not the evidence can be made more conclusive.

"In the meantime we will continue to supply the product as outlined in our letter of August 10, and that is, that only urgent demands will be filled, and we will in no way push the item or issue literature, or advertise it.

"After we have satisfied ourselves as to the relative merit of the pharmacological work, we will then decide whether or not Ephedrol with Ethyl Morphine Hydrochloride will be put on the market in the regular way, or withdrawn entirely."

The next communication was received a year later (October, 1929). The firm wrote:

"Our pharmacological investigations regarding the use of Ephedrine in conjunction with Ethyl Morphine Hydrochloride have now been completed and published in part by Mr. E. E. Swanson in the Journal of Pharmacology and Experimental Therapeutics, Volume XXXVI, No. 4, August, 1929.

"The results of this work we feel justify us in not withdrawing from the market our 'Ephedrol with Ethyl Morphine Hydrochloride.' As you know, we modified the name and composition of this preparation to meet the criticisms of the Council.

"We have prepared what we consider to be conservative literature, which will be distributed on and after November 1st. A copy of this new literature is enclosed."

The Council's referee has examined Swanson's paper, and is prepared to concede that intravenous injections of diethylmorphine produce bronchial spasm in dogs, and that this spasm is relieved by intravenous injection of ephedrine. However, as was pointed out in the previous report, this bronchial spasm occurs only with intravenous injection of relatively large doses, and nothing like it has been observed clinically. It does not, therefore, furnish a scientific indication for the routine use of the two drugs.

The fact remains unaltered that this is a shot gun cough mixture, relying on an opiate for its effect, and on the vogue of ephedrine for sales-appeal.

In consideration of the foregoing the Council declared Ephedrol with Ethyl Morphine Hydrochloride unacceptable for New and Nonofficial Remedies because it is an unscientific mixture marketed under an unacceptable proprietary name with unwarranted therapeutic claims.

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## COMMITTEE ON FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

EUGENE F. DU BOIS.
W. MCKIM MARRIOTT.
LAFAYETTE B. MENDEL.
H. C. SHERMAN.
MORRIS FISHBEIN, Chairman.

### PETER PAN BREAD

*Manufacturer.*—P. F. Peterson Baking Company, Twelfth Street, Omaha.

*Standard Formula.*—Ingredients blended before baking; the amount of each ingredient is given as percentage in relation to the amount of white flour used. The flour weight is given as 100 per cent and all other materials as a certain percentage in relation to that weight. This is the standard baking formula practice of the American Institute of Baking.

(*a*) 100 per cent short patent white flour.
Minimum glutein (protein) ..... 11.52%
Maximum ash ..... 0.38%
(*b*) 3 per cent granulated cane sugar.
(*c*) 6 per cent sweetened condensed milk containing 5 per cent butterfat.
(*d*) 3 per cent lard.
(*e*) 2 per cent salt.
(*f*) 1 per cent malt extract.
(*g*) 0.6 per cent yeast food.
(*h*) 2.5 per cent yeast.
(*i*) 58 per cent water, before baking.

*Bread Characteristics.*—Thoroughly baked. Very white inside as the result of thorough mixing and accurate fermentation. Soft velvety texture. Sweet flavor.

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### CLAPP'S ORIGINAL APPROVED BABY SOUP AND STRAINED VEGETABLES

*Manufacturer.*—Harold H. Clapp, Inc., Rochester, N. Y.

*Brands.*—Baby Soup: A combination of beef juice and vegetables. Wheatheart Soup: A combination of wheat germ, vegetables and cereals. Strained Vegetables: Spinach, wax beans, carrots, asparagus, peas, beets, prune pulp, apricot pulp and tomatoes.

*Process.*—Choice materials and up-to-date machinery are used. Steam cooking is done in closed Pfaudler glass lined tanks and chemical contamination of the materials is avoided. A temperature of 242 F. is reached.

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*Manufacturer.*—Ralston Purina Company, 835 South Eighth Street, St. Louis.

*Uses.*—Checkr-Redi Cooked Oats have been precooked to bring out their mellow flavor and to make them quickly prepared and easily digested.

### MINUTE GELATIN

*Manufacturer.*—Minute Tapioca Company, Inc., Orange, Mass.

*Composition.*—Pure granulated gelatin offered in convenient size cartons for housewives desiring to use plain gelatin in their kitchens.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 1, 1930

## RENAISSANCE OF IMMUNOLOGIC THEORIES

The most spectacular clinical victories of the last half century have been in the field of applied immunology. What other medical triumphs of this period rival the therapeutic miracle of diphtheria antitoxin; what diagnostic success has been greater than the Widal reaction; what surgical procedure is more justified than human blood transfusion? These successes justify the belief that mastery of fundamental immunologic facts will yield in time complete control of all processes of infection, but there is convincing evidence to indicate that at best current immunologic knowledge is lamentably inadequate [1] and that currently accepted basic immunologic theories are of questionable validity.

Modern immunology began with Pasteur (1880), who noted that test-tube cultures of micro-organisms are generally short lived. This he assumed to be due to an exhaustion of suitable food material. Transferring this starvation theory to the human body, Pasteur pictured convalescent immunity as the result of microbic exhaustion of some normal tissue component necessary for bacterial growth. With the subsequent demonstration of serum transfer of acquired immunity, however, Pasteur's exhaustion theory became obsolete. It was impossible to picture an effective transfer through serum of an absent biochemical factor. Then it was demonstrated that the self-sterilization of bacterial cultures is due not so much to starvation as to accumulated microbic products. Transferring this concept to the human body, Buchner and his colleagues pictured convalescent immunity as the result of retained microbic products or their derivatives. From the Buchner retention theory came the belief that there must be a constant, quantitative relationship between the injected antigen dose and the resulting convalescent immunity. So paradoxic were the quantitative relationships with experimental animals injected with diphtheria toxin, however, that Buchner himself was convinced of the error in his theory, which he therefore repudiated.

For its third theory, medical research turned to the real or assumed facts of cellular physiology. With minds committed to medieval beliefs in warring spiritual forces in the human body and ancient concepts of morbidic and antimorbidic humors, Pfeiffer and his colleagues assumed that the vital cells of the first men were endowed with minute samples of specific antimorbidic humors against each and every pathogenic agent which the human race was predestined to meet, and that these cells had also the potentiality of increasing and flooding the body with hereditary specific antidotes in times of need. Obviously Pfeiffer had to postulate a logical physiologic stimulus for the development of this specific antimorbidic internal secretion to meet emergencies. Influenced by Pavlov's demonstration of reflex secretion of gastric juice, Pfeiffer pictured this endocrine stimulus as an antigen-specific nerve reflex. This assumption, of course, was equivalent to postulating, a multiplicity of antigen-analyzing sensory nerve endings in human tissues or an equal multiplicity of antigen-specific nerve impulses. Neither assumption was verifiable by contemporary physiologists. Pfeiffer therefore, in turn, repudiated his theory, a voluntary sacrifice on the altar of medical progress.

Pfeiffer's basic faith in a natural antigen-specific endocrine endowment, however, was not discredited and was soon coupled with the assumption that the effective stimulus to emergency specific antimorbidic internal secretion is a circulating hormone. Picturing the antigen itself or its immediate dissociation products as this hormone, Pfeiffer's basic faith was endorsed by Ehrlich and elaborated into what is now known as the "side-chain theory" or "specific receptor theory" of immunity. As a result of high-pressure promotion, within one decade Ehrlich's side-chain theory became the generally accepted basis for theoretical deductions and clinical applications. Of course, the side-chain theory was not without its critics; but criticism was almost invariably directed against some minor, relatively unimportant, detail of the theory rather than against its basic beliefs. Interminable debates occurred as to whether or not the postulated union between antigen and the hypothetic hereditary antimorbidic side-chain obeyed the newly discovered laws of electrolytic dissociation. Equally inconclusive controversies developed as to whether or not certain hypothetic hereditary antimorbidic cell receptors were monovalent or asymmetrically polyvalent. This criticism was often discounted by international science as a subtle form of antiteutonic propaganda.

Present-day immunology was initiated by the discovery of acquired protein hypersensitiveness. On a superficial glance these newly discovered anaphylactic phenomena were confirmatory of Ehrlich immunology, requiring no important revision in its basic concepts. Detailed physiologic studies, however, in time yielded such a mass of wholly irreconcilable data that medicine

1. Recommendations of the Allergy Research Council of the Association for the Study of Allergy, this issue, Correspondence department.

was forced to the conclusion that for three decades it had been groping in complex biologic irrationality.[2] If this conclusion is endorsed by future historians, every immunoclinical victory during the Ehrlich dominance will be classed as a purely empirical observation.

Immunologic research is now turning to the known as assumed facts of protein chemistry, under the belief that the majority at least of all important antigens are of protein nature. By studying changes in electropotential in bacterial suspensions and in artificial protein mixtures, and by applying other progressive methods of modern biochemistry, Shibley,[3] Locke and his co-workers,[4] and others have concluded that injected antigens are conjugated with normal humoral and cellular colloids and have assumed that some of these conjugates or their derivatives are the specific "antibodies" of the Ehrlich nomenclature. Numerous apparent confirmations of the postulated Shibley-Locke antigen synthesis have been published during the last few years. By incubating mixtures of a diphtheria toxin and normal humoral proteins, for example, Kryshanowski [5] has reported the successful test-tube synthesis of diphtheria antitoxin. By incubating similar mixtures of normal serum and plant juices, Mez and his co-workers [6] report the successful preparation of artificial specific precipitins for plant proteins and successful specific agglutinins for plant cells. Similar results have also been reported by the Czechoslovakian clinician Kabelik [7] in his alleged artificial synthesis of specific precipitins for animal proteins. The Russian urologist Baschkirzev [8] currently reports the successful test-tube preparation of a specific bactericidal antiserum for the gonococcus.

Progressive immunology, therefore, is essentially a renaissance of the "obsolete," discredited, antigen-retention theory of Buchner, modified of course by the newer biochemistry. Apostles of the Buchner renaissance, however, are not repeating the classic error of assuming that buchnerian synthesis is the only method of immunologic adaptation in the human body, nor are they assuming that variations in the Buchner conjugates offers a complete explanation for all phenomena of anaphylaxis and immunity. Adequate and convincing proof or disproof of the Buchner concept is one of the most pressing problems of current immunologic research, a problem pregnant with a thousand potential clinical victories.

2. Manwaring, W. H.: Presidential Address, American Association of Immunologists, April 1, 1926; abstr. Arch. Path. **2**: 437 (Sept.) 1926.
3. Shibley, G. S.: Studies of the Mechanism of Specific Bacterial Agglutination, Arch. Path. **2**: 438 (Sept.) 1926.
4. Locke, Arthur; Main, E. R., and Hirsch, E. F.: The Nature of the Hemolysins of Normal and Immune Serums, Arch. Path. **2**: 437 (Sept.) 1926.
5. Kryshanowski, W. N.: Ueber die biochemischen Beziehungen der Diphtheriebazillen zu den Eiweisskörpern des Tierorganismus, Centralbl. f. Bakt. **110**: 1, 1929.
6. Mez, C., and Ziegenspeck, H.: Zur Theorie der Sero-Diagnostik, Botanisches Arch. **12**: 163, 1925.
7. Kabelik, J.: Antikörpererzeugung in vitro, Biologické listy, Prague, 1927, p. 31.
8. Baschkirzev, N. I.: Immunisierung von Blut gegen Gonokokken in vitro, Ztschr. f. Urol. **23**: 92, 1929.

## THE EPIDEMIOLOGY OF PELLAGRA

The epidemiology of such a disease as pellagra offers unusual difficulties, and the results readily lead to misinterpretation unless they are analyzed with rare judgment. The epidemiology of pellagra has presented facts not in accord with the apparently well established belief that the disease is due essentially to a nutritional deficiency. The history of the disease, its limited geographic distribution, its peculiarities of age and sex incidence, its confinement, at least in Europe, rather closely to a certain class of population, and some other features have raised doubts as to whether, after all, the disease might not be due to some infectious process.

The lamented Goldberger and his co-workers of the Public Health Service present, in a recently issued bulletin of the Hygienic Laboratory, an important study of certain features of the epidemiology of pellagra.[1] This is the culmination of a series of studies, some of the results of which have previously been published.[2] All these studies were made in certain textile mill communities, or so-called cotton mill villages, in South Carolina. Endemic pellagra has prevailed in such communities for many years, and they furnish an unusually fertile field for such studies.

In this country the epidemiology of pellagra has attained unusual importance from the fact that the results of such studies have been emphasized in attempts to elucidate its etiology. Notable studies of this character, made in the United States, have led to conclusions far different from those reached by Goldberger and his co-workers, who have done so much to develop and establish the etiology of this disease on the basis of a dietary deficiency. The studies of Siler, MacNeal and Garrison,[3] and also those of Jobling and Petersen,[4] made some time ago, led these authors to the general conclusion that diet, in all likelihood, played no part in the causation of pellagra, but that the disease was infectious in nature and probably spread in a manner somewhat similar to that by which typhoid is spread.

The epidemiology of pellagra plays small part in modern European literature except for the studies of Sambon.[5] These were particularly helpful by reason of their critical attitude toward the orthodox European opinion that the etiology of pellagra is essentially associated with a diet of maize; yet they were marred by an undue bias in favor of the author's own hypothesis that the disease was an insect-borne infection.

1. Goldberger, Joseph; and others: A Study of Endemic Pellagra in Some Cotton-Mill Villages of South Carolina, Bull. 153, Hyg. Lab., U. S. P. H. S., 1929.
2. Goldberger, Joseph; Wheeler, G. A., and Sydenstricker, Edgar: A Study of the Diet of Nonpellagrous and of Pellagrous Households in Textile Mill Communities in South Carolina, J. A. M. A. **71**: 944 (Sept. 21) 1918; Pub. Health Rep. **33**: 2038, 1918; **35**: 648 (March 19), 1650 (July 9), 1701 (July 16), 2673 (Nov. 12) 1920.
3. Siler, MacNeal and Garrison: Progress Reports, I, II, III, New York Post-Grad. M. School & Hosp., 1913, 1914, 1917.
4. Jobling, J. W., and Petersen, William: Epidemic of Pellagra in Nashville, Tenn., J. Infect. Dis. **18**: 501 (May) 1916; **21**: 109 (Aug.) 1917.
5. Sambon, L. W.: J. Trop. Med. & Hyg. **13**: 18, 19, 20, 21, 1910.

While apparently not so well known in the United States, and while not primarily epidemiologic studies, the experience of the British authorities [6] at Port Said and Alexandria in Egypt, during the World War, with a large group of Armenian refugees and with Turkish prisoners of war, added further data of importance to the epidemiology of this disease. These data supported in general the view that was held by Goldberger and his co-workers and were in accord with their results; that is, that the disease is essentially caused by some fault in diet.

It is worthy of note that in the study reported in the Hygienic Laboratory bulletin wise use was made of the services of a sanitary engineer to establish sanitary ratings, and the services of medical statisticians to interpret results. Here is a study in which physicians, sanitary engineers and statisticians have combined to secure and interpret results. The authors conclude that pellagra in an endemic locality is from two to six times more prevalent than the experience of local physicians would indicate, and that the fatality rate of the endemic disease, when consideration is given to definitely marked cases of all grades of severity, would appear not to exceed 3 per cent. These facts are highly important. The fatality rate of this disease has always been regarded as much higher. As the authors suggest, if this rate is used as a basis of estimating prevalence, it would indicate a much greater prevalence of the disease than is now accepted. To these new facts one additional observation of importance is added. The authors regard endemic pellagra as preponderatingly a disease of children from 2 to 15 years of age.

Careful attention seems to have been given to sanitary conditions in relation to the incidence of pellagra, and no consistent correlation between the two was disclosed. The authors believe, however, that there exists a marked inverse correlation between the incidence of endemic pellagra and family income, which is a fact of essential importance.

With regard to the striking seasonal incidence and prevalence of the disease, attention was devoted in a limited area to seasonal variations in food supply, and such variations seem to have been demonstrated to a marked degree. While the positive evidence that pellagra is due to some dietary fault has been convincing to the medical world, the discordances of its epidemiology have been confusing. If the disease is due to a dietary fault, the epidemiologic data should conform to this idea. The present study of the epidemiology of pellagra strongly indicates that carefully collected data, properly interpreted, are not so discordant as would appear from the epidemiologic observations of the past.

6. Report of an Investigation Concerning the Prevalence of Pellagra Among Turkish Prisoners of War, J. Roy. Army M. Corps **33**: 426, 508, 1919; **34**: 70, 173, 272, 1920. White, R. G.: Report of an Outbreak of Pellagra Among Armenian Refugees at Port Said, 1916-1917, Reports and Notes of the Public Health Laboratory, Government Press, Cairo, Egypt, 1919.

# Current Comment

## THE SPLEEN IN PREGNANCY

Professor Barcroft discovered accidentally that the spleen changes its volume in the course of pregnancy.[1] He had set aside three dogs to be taken for demonstration purposes to the physiologic congress at Stockholm. It was intended to demonstrate the contraction of the spleen as a result of exercise. Sometime before the expedition left England, the animal which had best demonstrated this point became a most unfit specimen and declined to take any form of exercise, while its spleen, suddenly shrunken and pale, showed small response to the exercise that it did take. Doubt arose in the mind of Professor Barcroft as to the validity of his previous experiments. Was the contraction of the spleen after exercise a less constant phenomenon than he had supposed? The dog was left behind in London and shortly afterward was killed and a necropsy performed. It was found that the uterus of this animal contained fetuses in a fairly advanced stage of development. The full significance of this observation was not realized until a second similar "accident." This time the animal survived and, in due course, gave birth to seven puppies. After the birth of the puppies, the spleen gradually enlarged until it had regained its normal size. Deliberate experiments were than made on animals by mating them at a known date and using nonpregnant animals as controls. The contraction of the spleen during pregnancy was thus definitely proved. Dr. Barcroft's explanation of this phenomenon is reasonable and in accord with his theory of splenic contraction under other conditions (exercise, hemorrhage and emotion). The vascular bed, that is to say the space within which the blood is contained, is observed to increase by the engorgement of the generative organs in pregnancy. That the blood volume is also increased has been shown by Rowntree.[2] The increase in blood volume occurs at about the middle of pregnancy or at the same time as the observed contraction of the spleen. The function of the spleen would appear to be to make up this extra volume of blood by a grant from its own large supply.

## DIFFUSION IN CEREBROSPINAL FLUID

Is there in the human system a third circulation, that of the cerebrospinal fluid? The methods by which various proponents have sought to demonstrate this circulation are not entirely conclusive. Recently doubt has been thrown on the theory of circulation [3] not only because of inconclusive experiments in its favor but also because no useful purpose can be imagined for a circulatory system of this fluid. It has been suggested that the process of diffusion would meet all the physiologic requirements of the nervous system. Research carried out in the department of neurosurgery of the Washington University School of Medicine was

1. Barcroft, Joseph: Alterations in the Volume of the Normal Spleen and Their Significance, Am. J. M. Sc. **179**: 1 (Jan.) 1930.
2. Rowntree, L. G., and Brown, G. E.: Studies in Blood Volume with Dye Method, Ann. Int. Med. **1**: 890 (May) 1928.
3. Howe, H. S.: Physiologic Mechanism for Maintenance of Intracranial Pressure, Arch. Neurol. & Psychiat. **20**: 1048 (Nov.) 1928.

devised [4] to measure the rate of diffusion of a dye in the cerebrospinal fluid of the dog. The experimenters argued that, if a system of circulation exists, the dye should be carried more rapidly in the fluid of the living animal than in a sealed tube; but that, if there is no true circulation, the diffusion would take place at the same rate under each of these conditions. The dura was exposed from the first sacral to the first dorsal vertebra, dye was injected without loss of volume to the cerebrospinal fluid, and the progress of the dye margin along the dura was observed. Similar experiments were carried out with the exposure of the cerebral and cerebellar dura and the conclusion was reached that the rate of diffusion is the same in the living animal as it is in vitro. These experiments are of considerable significance in their clinical applications. Since there is no circulation in the cerebrospinal fluid, therapeutic serums will reach all parts of the nervous system more rapidly if they are injected at a point where diffusion will be aided by gravity; that is, if they are injected into the ventricles or basal cisterna rather than into the lumbar meninges. Again, if it is desired to drain fluid from infected meninges, this can be done with less danger of spreading the infection if it is withdrawn from the region of the cisterna rather than from the spinal canal.

## RÔLE OF BODY TISSUES IN ACID-BASE EQUILIBRIUM OF THE BLOOD

The remarkable maintenance of the acid-base equilibrium of the blood is a complex process in which a number of contributory mechanisms are involved. Foremost, perhaps, are the excretory organs that are adapted to eliminate excess of acid or base. The lungs are restricted in this connection to the output of carbon dioxide that can be displaced from the blood by acids. The kidneys, on the other hand, present a larger possibility of adjustment processes, eliminating acid at one time and base at another. These two compensating excretory functions are continually in evidence. There are other factors, however, that may play a more immediate part in maintaining the acid-base equilibrium of the blood, notably the blood corpuscles and the body tissues. There may be a redistribution of ions between the plasma and the erythrocytes, while the tissues may act as "buffers." The part the latter may play can be determined by perfusion of isolated tissues or organs with blood of varied composition, so that the contributory action of the lungs and kidneys is excluded. In such tests, Katz and Banus [5] have found that the buffering material in muscle is not available as a reserve for the blood. Their experiments tend to indicate a low degree of permeability in the muscle tissue to the excess of chloride and hydrogen ions as well as to any cations that might compensate for a decreased alkali reserve of the blood. More recent investigations by the same workers [6] indicate that perfusion of blood acidified with hydrochloric acid through a hind-leg preparation of an animal tends to restore the acid-base equilibrium of the blood toward normal. Probably the resulting increase in carbon dioxide combining power and the restoration of $p_H$ toward normal can be explained by a shift in chlorides from blood to body tissues. Chlorides can therefore penetrate into some of the tissues other than muscle present in the hind-leg preparation as well as into the red blood cell. There is no evident outpouring of red blood cells from the bone marrow to facilitate the withdrawal of the acid ions from acidified blood. Furthermore, perfusion of such a fluid through bone does not cause the liberation of large amounts of calcium. A difference was not found in the amount of calcium which appears in the blood, regardless of whether acidified or normal blood was used in perfusion. Hence, contrary to the belief of some writers, calcium in bone is not available to any great extent as a source of buffer material for acidified blood. Precisely what "tissues" are actually involved in the regulatory functions remains to be ascertained.

4. Sachs, Ernest; Wilkins, Harry; Sams, C. F.: Studies on Cerebrospinal Circulation by a New Method, Arch. Neurol. & Psychiat. **23:** 130 (Jan.) 1930.

5. Katz, L. N., and Banus, M. G.: Observations on the Rôle of Tissues in Maintaining the Acid-Base Equilibrium of the Blood: I. The Effect of Isolated Muscle Tissue, Am. J. Physiol. **81:** 628 (Aug.) 1927.

6. Banus, M. G.; Katz, L. N., and Mull, J. W.: Observations on the Rôle of Tissues in Maintaining the Acid-Base Equilibrium of the Blood: III. Further Studies on the Hind-Leg Preparation, Am. J. Physiol. **91:** 150 (Dec.) 1929.

## NEW TREATMENTS FOR CANCER

In this issue of THE JOURNAL appears a communication from Drs. Coffey and Humber defining the present status of their method of treating cancer by the use of an extract of the cortex of the suprarenal gland. Also in the Correspondence Department appear statements from several other investigators who have contributed work of interest in this field. Thus, Hanson has had results, closely resembling those described by Coffey and Humber, following the administration of thymus extract. Sokoloff reports similar results following the use of an extract of the suprarenal combined with iron. Charlton announces lytic effects on cancer cells following the administration of an extract of the omentum. Associated with the publicity concerning the Coffey-Humber method of treatment, THE JOURNAL has received a dozen or more manuscripts describing the use of extracts of hypophysis and other glandular tissues. The interest of the Coffey-Humber method, in its present stage of investigation, lies primarily in the fact that the available evidence seems to demonstrate a definite effect on cancer tissue as the result of injecting suprarenal extract into the body at points removed from the tumor. Such an observation is of scientific interest in that it may provide a significant lead for future investigation pointing toward the development of a specific method in the treatment of cancer. Investigators in medicine have long realized that modern discoveries are the results of the accumulation of investigations over a series of years pointing toward a definite end. As long as work is conducted in good faith and under scientifically controlled conditions, destructive criticism is unwarranted. However, when thousands of sufferers from cancer are led to false hopes, when husbands mortgage homes in order to carry wives with incurable cancer across the continent for experimentation with unestablished methods, THE JOURNAL must continue to caution physicians and the public.

# Association News

## MEDICAL BROADCAST FOR THE WEEK

### The American Medical Association Health Talks

The American Medical Association, through its Bureau of Health and Public Instruction, broadcasts daily at 10 o'clock, Central Standard Time, with the exception of Friday, when the health message is delivered at 9:45, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of March 3-8 is as follows:

March 3. The Conquest of Hydrophobia.
March 4. The Conquest of Hydrophobia (continued).
March 5. The Conquest of Hydrophobia (concluded).
March 6. Smallpox Before and After Jenner.
March 7. Smallpox Before and After Jenner (continued).
March 8. The Advertising Physician.

The American Medical Association broadcasts daily at 12:20 to 12:25 over the following stations of the Columbia Broadcasting System: WBBM, Chicago; WFBM, Indianapolis; WCCO, Minneapolis; KOIL, Council Bluffs, Iowa; KMOX, St. Louis; WIBW, Topeka, Kan.; KFH, Wichita, Kan., and WMT, Waterloo, Iowa.

The subjects that will be presented for the week of March 3-8 are as follows:

March 3. Fashion Foils the Female.
March 4. Throw a Basket for Health.
March 5. Beyond Man's Vision.
March 6. Where the Wool Ought to Grow.
March 7. I Have a Headache.
March 8. Boots and Saddles.

## THE DETROIT SESSION

### Special Exhibit of Biochemical Diagnostic Methods

The Committee on Scientific Exhibit, on recommendation of the Advisory Committee, has authorized for the third year an exhibit and demonstration of various clinical laboratory diagnostic methods of a biochemical nature at the Detroit Session. The demonstrations have been arranged in three separate groups: (1) routine tests which every physician may undertake in his office; (2) chiefly the chemical blood determinations which have come into wide clinical use; (3) methods primarily of a research character. Space will be provided so that those who wish may consult with members of the group regarding their biochemical problems. The different methods will be demonstrated on a definite schedule each day. The exhibit and demonstrations are being arranged by Prof. V. C. Myers of Western Reserve University School of Medicine, with the collaboration of Dr. Roger S. Hubbard, biochemist, Clifton Springs Sanitarium; Prof. Joseph H. Roe of George Washington University School of Medicine; Dr. Oliver H. Gaebler, biochemist, Henry Ford Hospital; Drs. Edward Muntwyler and Charles T. Way, instructors in biochemistry, and Mr. Ramon Hanzal, teaching fellow in biochemistry, Western Reserve University School of Medicine.

### Exhibit by the Section on Obstetrics, Gynecology and Abdominal Surgery

The Section on Obstetrics, Gynecology and Abdominal Surgery will assist in the preparation of an exhibit as part of the Scientific Exhibit. The topics to be represented in this section exhibit are: (1) maternal mortality and morbidity; (2) intra-uterine roentgen diagnosis of fetal deformities, and (3) factors of sterility and their treatment. Members of the specialty are requested to take inventory of their material and communicate with the chairman of the committee, Dr. Fred J. Taussig, 3720 Washington Boulevard, St. Louis.

Applications must be made on the regular application form which is the one required by the Committee on Scientific Exhibit. Letters and application blanks have been mailed to those who registered in this section at the last two annual sessions. Others who desire blanks may obtain them by addressing the chairman of the Section Exhibit, or the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago.

Applications should be filed not later than March 10 with the chairman of the Section Exhibit. The committee in charge of this exhibit is composed of: Fred J. Taussig, M.D., chairman, St. Louis; F. P. McNalley, M.D., St. Louis, and M. E. Davis, M.D., Chicago.

### Hotel Reservations

A list of Detroit hotels and an application form, which can be used by those who expect to attend the Detroit Session in making hotel reservations, will be found on page 44 of the advertising section of this issue of THE JOURNAL. The forms should be filled out as completely as possible and sent to Dr. William C. Lawrence, Chairman of the Hotel Committee, 1805 Stroh Building, Detroit, Mich.

## THE BOARD OF TRUSTEES PROTESTS AGAINST THE PORTER NARCOTIC BILLS

The Board of Trustees has filed protests against the enactment of the Porter narcotic bills (H. R. 9053, A Bill to create in the Treasury Department, a Bureau of Narcotics, and for other purposes; H. R. 9054, A Bill To further carry into effect the international convention for the suppression of the abuse of opium and other drugs signed at The Hague on January 23, 1912, and for other purposes). The protest has pointed out (1) that existing federal narcotic laws already provide adequate machinery for their enforcement by the Bureau of Prohibition; (2) that there is no evidence to show that, if the present enforcement machinery fails to function effectively, it does so because of any inadequacy in the laws now in force, or that any supposed inadequacy will be remedied by this bill; (3) that discretion with respect to the quantity of opium that may be imported annually is more safely vested as at present in the Federal Narcotics Control Board than it would be in a single commissioner, and (4) that the increase in the enforcement personnel proposed by this bill for the projected bureau of narcotics, if provided for the Bureau of Prohibition, which is now charged with the enforcement of the federal narcotic laws, will accomplish all that a similar increase could accomplish in the proposed bureau of narcotics and will do so without disrupting administrative procedure and destroying precedent, as must be done if the proposed bureau should be created.

The protest filed against H. R. 9054 covers essentially the same points that were brought out in the leading editorial in THE JOURNAL, February 8. It points out that the bill proposes to create another federal licensing system, with the primary purpose of taking from the states their rights to determine who may use narcotic drugs professionally and sell such drugs within those states. The bill, if enacted, would place the supreme control over such matters in one federal officer, the Commissioner of Prohibition. The trustees of the Association believe that the federal government should first ascertain whether the states allow unfit persons to use narcotic drugs professionally or to deal in them commercially, and then to give the states an opportunity to correct such evil conditions if they actually exist. If the federal government has evidence that any state is permitting unfit persons to engage in callings whereby they may control narcotic drugs, the evidence should be submitted to the offending states with a view to action. The trustees consider that the absolute prohibition by this bill of the licensing of persons convicted of violating any state or federal law relating to narcotic drugs is unreasonable, since conviction may be the result of a purely technical offense, such as failure to register under the Harrison Narcotic Act before the last day allowed by law. The proposed bill recognizes absolutely no difference between the gravity of various offenses as far as the issue of licenses is concerned. There are laws now in many states which authorize the revocation of license of physicians who are drug addicts and which provide for the revocation of licenses following violation of the narcotic laws or for the commission of felony.

The trustees oppose the policy of concentrating in one officer in Washington the enormous authority that would be conferred on the Commissioner of Prohibition if H. R. 9054 should be enacted. His authority would be practically unlimited; he would have the sole power of licensing and of revoking licenses

and would be empowered to make the very regulations under which he is to license or revoke licenses. He would be provided with inspectors to ferret out supposed violators of the law, and this same force of inspectors would conduct the hearings on evidence that it had accumulated itself. While there is some provision in the bill for appeal to the courts from the decision of the Commissioner of Prohibition, that provision is vague and does not undertake to confer specific authority on the appellate courts to hear witnesses and to review the case on the basis of fact. The appeal, therefore, probably would be limited to questions of law, and the findings of fact by the Commissioner of Prohibition would be final.

The trustees in their protest stated that they stand ready to cooperate in the enactment of any reasonable bill that offers a fair prospect of increasing the efficiency of existing laws in limiting the use of narcotics to medical and other legitimate purposes. The present bill, as proposed, they consider manifestly unreasonable and some of its provisions absurd.

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# *Medical News*

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

## CALIFORNIA

**Public Health Work in Southern California.**—A survey of the cities and counties of southern California shows that they spent about $2,500,000 last year in the promotion of public health, $1,000,000 of which was expended in the control of communicable disease, and nearly $300,000 each in the promotion of sanitation and the maintenance of public health nursing activities. There are 1,265 employees of the public health departments in these cities and counties. Among these are 383 physicians, 292 public health nurses, 203 sanitary inspectors, 161 laboratory workers, 150 clerks and fifty-four food inspectors.

**Society News.**—A mental hygiene clinic for school children has been established by the Los Angeles County Health Department with Ellen B. Sullivan, Ph.D., of the University of California in charge. The clinic has been opened at the East Side Health and Welfare Center in Belvedere. It will handle cases of mental, educational, social or personality maladjustments with a view to assisting the county schools in arriving at a diagnosis and understanding of their problem children.——The Contra Costa County Medical Society was addressed, January 14, by Dr. John H. H. Scudder, Oakland, on "Errors in Diagnosis of Appendicitis."

**Medical School Celebration.**—Alumni of the University of California Medical School will celebrate its sixty-second anniversary of Charter Day, March 25, by holding a series of clinics and addresses. Among others, Drs. William P. Lucas and Aberhardt Crawford Bost will give "A Presentation of the Results of Feeding Infants on Various Types of Formulas During the Last Four Years"; Dr. Minola Stallings will speak on "Observations on Juvenile Diabetes with Case Presentation," and Dr. Howard C. Naffziger on "Some Clinical Aspects of Neurologic Surgery." During the session, the Harvey tercentenary film, "De Motu Cordis," which was produced for the Royal College of Physicians, London, will be shown. The meetings will be held at the University Hospital, Third and Parnassus avenues, San Francisco.

## FLORIDA

**Free Distribution of Biologic Products Abandoned.**—At a recent meeting of the state board of health it was decided to abandon the policy of the free distribution of therapeutic biologic products save for administration to those who are definitely unable to pay for them. Exceptions will be made from this policy for the present in the case of hookworm disease and malaria. Certain units of diphtheria antitoxin, tetanus antitoxin, anaerobic antitoxin and antimeningococcus serum are furnished only to physicians who will agree to furnish for each package of therapeutic serum used a "certificate of indigency" on the form provided on the package. The 1,500 unit package of tetanus antitoxin is regarded as a prophylactic measure and will be furnished free for all cases. Other items which will be furnished free without the certificate are vaccine virus, Schick test material, carbon tetrachloride, toxin antitoxin (diphtheria) and typhoid bacteria (plain and triple). Antirabic virus will be furnished without charge, but it will be necessary for the board of health to know the name of the patient receiving the treatment and of the physician administering it.

## GEORGIA

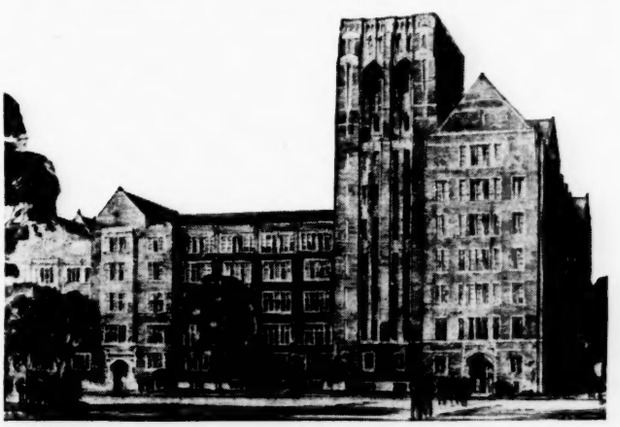
**Society News.**—The Fulton County Medical Society was addressed, February 20, by Dr. Cyrus W. Strickler on "Comparisons of Treatments Now Used in Pneumonia"; Dr. Benjamin T. Beasley, Jr., gave a clinical talk on "Ergot in Surgery," and Dr. Lewis M. Smith presented a case report on "Congenital Atresia of Duodenum."——Fifty or more Georgia counties will observe "health education week" the first week in May. The program is being planned and carried on by the state medical association and the state board of health.

## ILLINOIS

### Chicago

**Hospital News.**—The new buildings of the Norwegian-American Hospital were dedicated, February 16. Among the speakers were Drs. Karl F. M. Sandberg, Francis E. Thornton, Ludvig Hektoen and Hugh S. Cumming, surgeon general, U. S. Public Health Service, Washington, D. C.

**University of Illinois to Build Laboratory.**—The University of Illinois College of Medicine will soon undertake the construction of a $1,500,000 laboratory building on the site of the old Cubs ball park, at the southeast corner of Polk and Lincoln streets. The brick and stone structure, containing 2,200,000 cubic feet, will provide room for the departments of



anatomy, chemistry, physiology, pathology and pharmacology as well as class rooms. In its architectural features, it will harmonize with the English collegiate gothic style of the research hospital, library building, various laboratories, nurses' home, power plant, and laundry, costing about $4,500,000, which have already been completed, and a building to be devoted to juvenile research which is nearing completion. Plans have been made to accommodate ultimately classes of 200 medical students and 100 dental students, though at the present time facilities in the clinical departments will not permit classes of this size. Near the site of the ball park is the new school of pharmacology. Since the present medical campus was acquired in 1922, the University of Illinois College of Medicine has steadily carried on a building program. When completed within the next few years, it will provide a medical plant comparable to the best in the country.

**Society News.**—Dr. Bert W. Caldwell, executive secretary, American Hospital Association, addressed the Physicians' Fellowship Club, February 21, on "Cost of Hospitalization."——The Chicago Society of Internal Medicine was addressed, February 24, the fifteenth anniversary of its incorporation, by Dr. William C. Buchbinder on "Effects of Strophanthin and Quinidine Sulphate on the Fibrillating Tongue Following Hypoglossotomy"; Dr. Andrew C. Ivy, G. E. Drewyer and Dr. Benjamin H. Orndoff, "Effect of Cholesystokinin on the Human Gallbladder," and Dr. William F. Petersen and Samuel A. Levinson, "Coordinated Laboratory and Clinical Studies on Tuberculosis Patients."——The Chicago Medical Society was addressed, February 19, by Dr. Charles C. Bass, dean and professor of experimental medicine, Tulane University of Louisiana School of Medicine, New Orleans, on "Malaria."

**Dr. Gellhorn Will Give the Bacon Lectures.**—Dr. George Gellhorn, professor of obstetrics and gynecology, St. Louis University School of Medicine, will deliver the annual Bacon lectures at the University of Illinois College of Medicine. The first lecture will be given, March 6, between 5 and 6 o'clock, on "Use of Local Anesthesia in Gynecology," and the second, March 7, between 10 and 11 o'clock, on "Syphilis of the Uterus." The lectures will be given in the library of the medical school, 1817 West Polk Street, and physicians are cordially invited.

## KENTUCKY

**Bills Introduced.**—S. 273 and H. 454 propose to make it unlawful to manufacture, sell, possess or distribute in any manner intoxicating liquors for sacramental, medicinal, scientific or mechanical purposes.

**Society News.**—Portland will receive $10,000 for a health center, it is reported, from a wealthy citizen of Louisville on condition that residents of the area provide a lot for the structure.——The Daviess County Medical Society was addressed at Owensboro, January 28, by Drs. Joseph H. Harrison and Robert Haynes Barr on "Rectal-Anal Reflexes" and "Technic and Indications for Rectal Anesthesia," respectively.——The Shawnee County Medical Society was addressed, February 3, by Dr. Samuel R. Slaymaker, Chicago, on "Interpretation of Some Heart Murmurs."——A symposium on epidemic cerebrospinal meningitis was presented before the Jefferson County Medical Society, Louisville, February 3, by Drs. John J. Moren, Morris Flexner, Aura J. Miller, Frank W. Pirkey and W. James Gardner, Cleveland.

## MAINE

**Condylis Never Went to Harvard.**—Alexander Condylis has been arrested and is now in the hands of the federal and county authorities, according to the secretary of the state board of registration in medicine. He had been practicing medicine in Maine and recently was granted a permit under the Harrison Narcotic Act. He claimed to be a Harvard graduate of 1928, but inquiry to the dean revealed that he had never attended Harvard University Medical School. He said that he obtained his medical education by studying in the Boston Public Library and by "stealing" into clinics.

## MISSISSIPPI

**Bills Introduced.**—S. C. R. 13 proposes (1) to abolish all state charity hospitals and (2) to apportion a sum equivalent to the annual appropriation for these hospitals among various county hospitals treating charity patients. S. 100 proposes to permit life insurance policies not exceeding $25,000 on any one life to be issued without medical examination. S. 114 proposes to create a board of barber examiners and to regulate barbering.

## MISSOURI

**Society News.**—James E. Ackert, Ph.D., acting head, department of zoology, Kansas State Agricultural College, Manhattan, Kan., addressed the Jackson County Medical Society, February 25, on "Recent Developments in Parasitology of Interest to the Medical Profession."——The Kansas City Academy of Medicine was addressed, February 21, by Dr. Robert M. Isenberger, University of Kansas School of Medicine, Lawrence, Kan., on "Intravenous Anesthesia."

**Hospital News.**—According to the dean of the school of medicine, a $1,000,000 hospital in St. Louis for patients of moderate means, to be administered by the school of medicine of St. Louis University and the Sisters of St. Mary, was provided for by the will of the late Firmin Desloge. There will be approximately 300 beds. It will be called the Firmin Desloge Memorial Hospital and will be erected on a site now held by the university for hospital purposes, located opposite the medical school.——The cornerstone of the $1,000,000 hundred bed St. Louis County Hospital was laid at Clayton, Dec. 22, 1929; the building is about one fourth completed and is expected to be ready for occupancy, September 1.

## NEBRASKA

**Society News.**—The Omaha-Douglas County Medical Society was addressed, February 17, by Dr. Noble Wiley Jones, Portland, Ore., on "Sinusitis and General Systemic Disease," and Dr. Frederick Epplen, Seattle, on "Stramonium in Encephalitis."——The Nebraska Pediatric Society was addressed, February 13, by Sergius Morgulis, Ph.D., head of the department of biochemistry, University of Nebraska College of Medicine, Omaha, on "Acid-Base Equilibrium—Its Application in the Practice of Pediatrics."

## NEW JERSEY

**Bills Introduced.**—S. 117 and H. 284 propose to provide for liens in favor of hospitals, physicians and nurses for the care of persons injured in accidents on any judgment or settlement obtained by the injured person by reason of the accident. S. 207 proposes to require a physician treating a patient bitten by any animal subject to rabies to report the case to the local board of health within twelve hours after his first professional attendance. H. 160 proposes to amend the medical practice act to allow chiropractors duly licensed under the act "to use in connection with hand manipulation and adjustments such adjuncts as electricity, diet, sunrays and water, in conjunction with chiropractic treatment, without the use of drugs." H. 161 seeks to authorize osteopaths duly licensed in the state "to use in their practice such adjuncts as water, food, nonpoisonous herbs, air, heat, cold, light, sun, earth, electricity, usual household remedies, antiseptics, germicides, mental impressions, suggestions, manual, physical or mechanical agencies, for therapeutic purposes." H. 168 proposes to continue for another year a half mill tax for the purpose of paying the cost of constructing and equipping state charitable, hospital and sundry other state institutions. H. 183 proposes to provide for a $300 apportionment out of state school moneys to each district employing a full-time registered school nurse and for a $100 apportionment to each district uniting for part-time employment of a school nurse. H. 195 seeks to amend the dentistry act by providing that the board of dental examiners shall permit each applicant to take at least four examinations and, further, to provide that applicants who have passed in any subject shall not be required to be reexamined in that subject in event of reexamination because of failure to attain the required general passing mark. H. 202 proposes to provide for the appointment of impartial expert witnesses by the court, either on the motion of the court or on the motion of the parties to any action. H. 214 proposes to amend the medical practice act by providing that holders of licenses to practice medicine in other states, who have been honorably discharged from the naval or military service of the United States during the World War, may be granted a license to practice medicine without examination. H. 218 proposes to amend the laws regulating the practice of osteopathy by (1) designating the practice so regulated by the term "practice of osteopathy and surgery"; (2) providing that after July 1, 1935, an applicant for such a license shall have had a one-year course in chemistry, physics or biology prior to his professional studies, and after 1938, a preprofessional course of two years in chemistry, physics or biology; (3) providing that the license shall authorize the holder to practice osteopathy in all its branches, including minor surgery and obstetrics, without restriction, but shall not authorize the holder to practice major operative surgery without obtaining an additional license to practice such surgery; (4) providing that an osteopathic physician duly licensed in the state may use the title "doctor" or the abbreviation "Dr."; (5) providing that all reports and certificates and matters pertaining to the public health made by osteopathic physicians shall be accepted by the department to whom they are made and shall have the same force and effect as reports or certificates issued by physicians of other schools, and (6) providing that the holder of a license to practice osteopathy may be examined for a license to practice major operative surgery on showing two years' internship in an approved osteopathic or medical hospital, or a two year postgraduate course in a reputable college of osteopathy or medicine, in surgery, or at least three years of actual practice in major surgery. H. 288 proposes to provide for the creation of a state board of naturopathic examiners and to regulate the practice of naturopathy, and defines the practice of naturopathy as "that system of the healing art which uses and prescribes the use of the combined psychologic, mechanical and material sciences of healing as taught in schools, institutes and colleges of naturopathy, which shall include psychotherapy, mechanotherapy, hydrotherapy, electrotherapy, pneumotherapy, neuropathy, physiotherapy, chromotherapy, corrective and orthopedic gymnastics, spondylotherapy, geotherapy, dietetics, histolotherapy, phytotherapy and external applications." H. 299 proposes to authorize any city of the first class to expend not to exceed $250,000 annually for the treatment and care of indigent residents as patients in any incorporated hospital located in that city. H. 328 proposes to supplement the pharmacy act by providing that in all prosecutions instituted for a violation of that act a certificate signed by the president or secretary of the board of pharmacy stating that the person charged with the alleged violation was not, at the time of the alleged violation, registered as a pharmacist or registered assistant pharmacist, shall be prima facie proof of that fact. H. 343 proposes to amend the medical practice act by providing that a license to practice chiropractic shall authorize the holder "to use in con-

nection with hand manipulation and adjustments such adjuncts, substitutes or other means or methods in conjunction with chiropractic treatment, without the use of drugs, as may be essential or necessary to conform to the modern methods of treatment." H. 93 proposes to create a state board of surgical examiners, to consist of four general surgeons, two gynecologists, two urologists, one orthopedist, one ophthalmologist and otologist, one laryngologist and rhinologist, one pathologist, one obstetrician, one roentgenologist and one anesthetist to examine and license persons to practice general surgery or any of its branches, as gynecology, obstetrics, urology, orthopedic surgery, ophthalmology, laryngology, otology, rhinology, proctology, roentgenology, pathology or anesthesia. Applicants to practice any of these specialties must show, in addition to graduation from a reputable medical college, a certain number of years of postgraduate study, differing as to the specialty desired, and varying from four years of postgraduate work as in the case of general surgery to two years of postgraduate work in the case of ophthalmology. The board would confer on successful applicants such degrees as master of surgery or master of gynecology, depending on the specialty. The bill specifically sets out that "these provisions shall apply to all persons professing or attempting to cure any surgical disease by means of osteopathy or chiropractic or any of the so-called systems, faith-curisms, mind-healing, laying-on-of-hands and other similar systems."

## NEW YORK

**Society News.** — The Medical Society of the County of Albany was addressed, February 19, by Dr. George P. Pitkin, Bergenfield, N. J., on "Controllable Spinal Anesthesia," illustrated, and Dr. Lemuel Whittington Gorham, Albany, "Psittacosis," with report of five cases. —— The Chemung County Medical Society is conducting a series of lectures; one is to be given, March 5, by Dr. John S. Lawrence, Rochester, on "Jaundice," and the other, March 12, Dr. Lawrence A. Kohn, on "Modern Conceptions of the Relation of Bacteria to Disease."

**Bills Introduced.**—H. 871 proposes to authorize the state health commissioner to establish in each county one or more cancer clinics. H. 991 proposes to prohibit the manufacture, transportation, possession or sale of any intoxicating liquor to be used for beverage purposes, provisions similar to the Volstead Act being made, however, for prescribing by physicians for medicinal use. H. 1130 proposes to make it a misdemeanor for any person except a licensed physician or physical therapeutist to sell "any medicine, instrument or appliance, or other commodity, of a therapeutic nature or designed to give therapeutic relief" without receiving from the buyer a written order or prescription of a physician or physical therapeutist authorizing the use of the article to be sold. S. 896 and H. 1169 propose to amend the optometry law so as to permit the sale of spectacles fitted with plain spherical lenses when sold as merchandise in established places of business.

### New York City

**Funds to Buy Ten Horses.**—The Altman Foundation has given $4,400 to New York University for the purchase of ten horses in which serum to combat pneumonia is to be developed, according to Dr. Shirley Wynne, city health commissioner. The work will be done in the department of health's research laboratory and is said to be an outgrowth of that done in the laboratory with the aid of an annual grant of $25,000 from Lucius N. Littauer. The recent gift will permit the purchase of additional horses required for the production of this new serum and allow the other horses to be used for developing the serum for type 1 pneumonia. Besides those mentioned, other collaborators in the work are the Metropolitan Life Insurance Company, New York University and Bellevue Medical College, the Harriman Fund, Harvard University, and the Harlem, Bellevue, New York and Boston City hospitals.

**Society News.**—Dr. Thomas P. Sprunt, Baltimore, addressed the Medical Society of the County of Kings, February 18, on "Infectious Mononucleosis"; Dr. George J. Kastlin, Pittsburgh, "Agranulocytic Angina," and Dr. Nathan Rosenthal, New York, "Acute Leukemia." —— Dr. Carl A. Hedblom, Chicago, will address the Brooklyn Surgical Society, March 6, on "Diagnosis and Surgical Treatment of Bronchiectasis with Special Reference to Contrast Mediums in Bronchography" and "Surgical Treatment of Pulmonary Abscess." —— The Bronx County Medical Society was addressed, February 19, by Dr. David Greenberg on "The Significance of the Various Laboratory Procedures in Internal Medicine," and Dr. Charles Herrman, "Recent Progress in Treatment of Common Communicable Diseases of Childhood."——Dr. Mervin C. Myerson addressed the Ruthland (Vt.) Medical Society, February 11, on "Bronchoscopy and Esophagoscopy for the Physician and Surgeon."

**Hospitals Contract for City Ambulance Service.**—In the reorganization conference of the emergency hospital service held by the city department of hospitals, contracts were made with eleven private hospitals, operating twenty-four ambulances, according to Thomas J. Cox, deputy hospital commissioner. The city agreed to appropriate $3,500 for the maintenance of each ambulance, $1,000 over the appropriation allowed in 1928. Hospital and other medical authorities contend, it is reported, that the city has driven a "hard bargain" with private hospitals and cite the appropriation of from $7,200 to $7,500 an ambulance for the city's own hospitals. On account of the fact of the heavy cost of maintaining emergency ambulance service, the New York Hospital delayed signing the contract, and is seriously considering a reduction of its fleet of ambulances. Several hospitals have abandoned their ambulance service and, as a result, an area of several square miles on the west side of Manhattan, including the theatrical district, must depend on ambulance service from the remote points. In 1929, the city's emergency ambulance service responded to 186,000 calls and the total cost was $239,000.

## NORTH CAROLINA

**The Duke Hospital Library.** — The hospital library of Duke University will occupy a three floor department in the nearly completed hospital and medical school building. It is expected to contain 20,000 volumes by July 1. The library covers all fields of medical science, and one of its principal collections is that of the late Dr. J. Howell Way on public health. One of the unusual sets is the thirty-one volume shelf by Leonardo da Vinci, the Italian artist, who wrote all his works in reversed longhand; a mirror is required to read them. The basement and subbasement floors of the new medical school building will be used for stack rooms and the first floor will be the reading room. Miss Judith Farrar, formerly of Columbia, S. C., has been appointed hospital librarian, and Marcellus E. Winston, Rocky Mount, will be superintendent of the hospital and professor of hospital administration, according to Dean Davison of the medical school, which opens October 1.

## PENNSYLVANIA

**Society News.** — The Allegheny County Medical Society was addressed, February 18, by Dr. Alfred J. Buka on "Fracture of the Metatarsals"; Dr. Simon H. Ratner, "Tuberculosis of the Larynx," and Dr. Frank D. Hazlett, "Epidemic Meningitis." —— Dr. Henry J. Gerstenberger, Cleveland, presented "Cineographs of Some Interesting Pediatric Conditions" before the Erie County Medical Society, February 4.

**Enjoinment Against State Board Dismissed.**—The court of common pleas of Allegheny County, January 23, dismissed a bill in equity to enjoin the Pennsylvania Board of Medical Education and Licensure and the department of public instruction from enforcing the provisions of the medical practice act in regard to chiropractic practice. The court said:

> It is our opinion that chiropractic is a branch of medicine and surgery subject to the provisions of the "Medical Practice Act" of 1911; that the title of that act gives notice of the subject and substance of the act, and that the act is constitutional; that the act must not be construed so strictly as to defeat the obvious intention of the legislature, and that intention was to include chiropractors within its provisions; and that by the terms of the act the board of medical education and licensure is vested with authority to make rules and regulations for the purpose of enforcing the provisions of the act.

### Philadelphia

**Hospital News.**—At a meeting of the board of trustees, February 14, the name of the Samaritan Hospital, the teaching hospital of the medical school of Temple University, was changed to Temple University Hospital.——A new $1,000,000 building will soon be erected, it is reported, to house the joined activities of the Woman's Hospital of Philadelphia and the West Philadelphia Hospital for Women. The institution which resulted from the merger will be known as the New Woman's Hospital of Philadelphia. —— The new 125 bed tuberculosis annex of the Philadelphia General Hospital will be ready to receive patients about March 15.

**Society News.**—Dr. Norman L. Knipe talked on "Objectionable Obstetrics," February 21, in the series of postgraduate seminars being conducted by the Philadelphia County Medical Society.——The Northern Medical Association of Philadelphia held a symposium on syphilis, February 17; the paricipants were Drs. Sigmund S. Greenbaum, Edward J. G. Beardsley, Leonard Napoleon Boston, Sherman F. Gilpin and Joseph C. Yaskin.——Dr. Isolde T. Zeckwer addressed the Physiological Society of Philadelphia, February 17, among others, on "Alteration in the Response to Insulin During Experimental Leukocytosis."——The Philadelphia Academy of Stomatology

was addressed, February 25, by Henry Klein, D.D.S., on "The Effects of Deficient Diets on the Skeletal Development, Including the Development of Teeth."

## RHODE ISLAND

**Bills Introduced.**—H. 691 proposes to amend the law relating to death certificates by providing that such certificates show whether the deceased was a war veteran. H. 709 proposes to establish a board of barber examiners and to regulate barbering.

**Society News.**—Members of the Newport County Medical Society were guests of the staff of the naval hospital, Newport, January 16, when Dr. Frederick A. Asserson spoke on "The Injection Treatment of Varicose Veins"; Dr. Edward V. Murphy, "The Present Status of Serum Treatment of Pneumonia"; Dr. John Ridlon, "The Orthopedic Aspect of a Miracle," and Dr. William S. Sherman, "Some Notes on Early Medicine and Surgery."

## TENNESSEE

**Society News.**—A new training course for state health officers was opened, February 17, by Vanderbilt University in cooperation with the state department of education. It consists of graduate work at Vanderbilt in the department of preventive medicine for six weeks to be followed by a six weeks' course in the field service.——The Madison County Medical Society was addressed, February 18, by Dr. Russell K. Hollingsworth, Jackson, on "Acute Suppurative Pancreatitis with Report of Case and Autopsy."——Dr. Thomas J. Stockard, Lawrenceburg, among others, addressed the Five Counties Medical Society, Savannah, January 28, on "Medical Ethics."

**Health at Memphis.**—Telegraphic reports to the U. S. Department of Commerce from sixty-four cities with a total population of 30 million, for the week ended February 15, indicate that the highest mortality rate (27.7) is for Memphis, and the mortality rate for the group of cities as a whole, 14.1. The mortality rate for Memphis for the corresponding week last year was 22.8, and for the group of cities, 15.3. The annual rate for sixty-four cities for the seven weeks of 1930 was 13.8 as against a rate of 17.8 for the corresponding weeks of 1929. Caution should be used in the interpretation of these figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large negro population may tend to increase the death rate.

## VIRGINIA

**Society News.**—Dr. Clarence Porter Jones, Newport News, addressed the Warwick County Medical Society, February 11, on "Certain Diseases of the Eye Resulting from Focal Infection from Some Parts of the Body."——Among others, Dr. Kenneth Maxcy, professor of public health and hygiene, University of Virginia, addressed the University of Virginia Medical Society, January 13, on "Typhus Fever in the United States."——Dr. Walter Brownley Foster delivered an address on "Negro Mortality," January 9, at Richmond before the Virginia Public Health Association.

**Bills Introduced.**—S. 63 proposes to appropriate $100,000 to aid hospitals maintained jointly by two or more counties or cities which conform to certain requirements of the state department of health and care for Virginia citizens who are not residents of the counties or cities jointly maintaining the hospitals. H. TN. 401 proposes to amend the law relating to optometry by providing that any person of good moral character above 21 years of age who has at any time practiced optometry in Virginia for not less than one year shall be granted a certificate without examination. S. 364 proposes to amend the state prohibition law by providing that every person, including druggists and merchants, who sells either at retail or wholesale "patent" and proprietary medicine and other liquids designed for internal human use which contain more than 10 per cent alcohol shall file monthly with the clerk of the circuit or corporation court of his county or city a detailed report of the names, addresses and ages of the purchasers of such liquids.

## WASHINGTON

**Society News.**—Dr. Laurence Selling, Portland, Ore., addressed the King County Medical Society, February 3, at Seattle on "Some Recent Aspects of Motility Disorders," and Dr. Harry C. Olmsted on "Impetigo Neonatorum—A Present-Day Hospital Nursery Problem."——Dr. Moses E. Steinberg, Portland, Ore., gave an illustrated address before the Clark County Medical Society at Vancouver, recently, on "Fractures."——The Walla Walla Valley Medical Society was addressed, February 12, by Dr. Theodore W. Adams, Portland, Ore., on indications and contraindications of cesarean sections, and Dr. Albert L. Mathieu, Portland, "Lipiodol Injections as a Diagnostic Aid in Gynecology"; Dr. Wallace A. Pratt, Walla Walla, gave a brief survey of records of cesarean sections in Walla Walla during the past three years. Dr. Albert M. Snell, Rochester, Minn., addressed the society, February 27, on "Observations on the Diagnosis and Treatment of Jaundiced Patients."——Among those who addressed the North Pacific Pediatric Society in Seattle, January 25, were Dr. James W. Rosenfeld, Portland, Ore., on "Congenital Dilatation of Ureters"; Dr. Darcy M. Dayton, Tacoma, "A Tentative Method for the Control of Pylorospasm in Infancy"; Dr. Laurence Selling, Portland, Ore., "Recent Views on Tic," and Dr. Henry H. Skinner, Yakima, "My Recent Visit to Pediatricians in Japan, Poland, Belgium and Scotland, Also Hospital Facilities in Moscow, Russia."——Dr. Frank C. Mann, Rochester, Minn., will address the King County Medical Society, March 10, on "Physiology of the Liver." The society will be addressed, March 3, by Dr. Albert M. Snell, Rochester, Minn., on "Observations on the Diagnosis and Treatment of Jaundiced Patients"; a public health league movie show will also be presented.

## GENERAL

**Society News.**—Dr. Solon Marx White, Minneapolis, was made president elect of the American College of Physicians at its recent annual meeting, and Dr. Sydney R. Miller, Baltimore, was installed as president.——The thirty-fifth annual convention of the American Physical Education Association will be held in Boston, April 1-5, at the Hotel Statler. Thomas H. Hines, High School, Brookline, Mass., is chairman of the local committee on exhibits.——The sixteenth annual observance of National Negro Health Week will be held March 30-April 6.

**Another Imposition.**—A man calling himself J. Sherman and claiming to be a representative of the Benevolent Order of Organized Workers has been calling on physicians in Washington, D. C., stating that he desired a medical examiner for this organization. At least one physician paid $25 to join the organization, since when neither J. Sherman nor any applicants have been seen. If any other member of the medical profession has been approached with any similar proposition, he is urged to communicate either with the Medical Society of the District of Columbia or with Mr. Murray, the U. S. district attorney for the District of Columbia.

**Health Study of Prisons Completed.**—The completion of the first comprehensive survey of more than 100 American prisons and adult reformatories from the point of view of health and medical service was recently announced. Counseling members of the advisory commission assisting in the work included: medicine, Dr. David L. Edsall, dean, Harvard University Medical School, Boston; surgery, Dr. George W. Crile, Cleveland; dentistry, Dr. Alfred Owre, dean, school of dental and oral surgery, Columbia University, New York; ophthalmology, Dr. William H. Wilmer, Johns Hopkins Hospital, Baltimore; hospital administration, Dr. Clarence C. Burlingame, Joint Administrative Board, New York, and psychiatry, Dr. William A. White, Washington, D. C. Reliance is placed on inmate help for the greater part of the hospital work, the report says, and health education is badly neglected in prisons. Among the conclusions reached were the following: 1. Prison hospitals should have an increased medical personnel; i. e., prisons with 500 inmates should have one full-time physician and those with more than a thousand should have an additional physician for each additional 1,000 inmates or a substantial percentage of that number. 2. Effort should be made to do all constructive surgery and other rehabilitation work while the inmate is available so that he may return to society with as few physical handicaps as possible. 3. Insane prisoners should be removed from penal institutions to hospitals for the treatment of mental diseases. 4. Prison diets should be organized with less meat and more vegetables. 5. Health education should be provided for all inmates. The headquarters office of the National Society of Penal Information is at 114 East Thirtieth Street, New York.

**Medical Bills in Congress.**—H. R. 6338, authorizing an appropriation of $750,000 for the erection of a hospital at the National Home for Disabled Volunteer Soldiers, Togus, Maine, has been passed by the House. H. Res. 160, introduced by Representative Fish, New York, proposes to authorize the appointment of a committee of five members of the House to investigate the activities of the narcotic section of the Prohibition Bureau. H. J. Res. 253, introduced by Representative Kobell, Oregon, proposes to provide for the expenses of a delegation of the United States to the Congress of Military Medicine and Pharmacy at Budapest in 1931. H. R. 8866, introduced by Representative Britten, Illinois, proposes to authorize an expenditure of $3,200,000 for buildings at the United States

Naval Hospital, Washington, D. C. H. R. 9993, introduced by Representative Browne, Wisconsin, proposes to prohibit the use of oleomargarine in any National Home for Disabled Soldiers, or in any naval or army hospital, or in any charitable institution supported by federal appropriations. H. R. 10040, introduced by Representative Shaffer, Virginia, proposes to authorize an appropriation of $1,500,000 to erect a veterans' hospital in Virginia. H. R. 10045, introduced by Representative Reed, New York, proposes to authorize an appropriation of $1,400,000 to erect a veterans' hospital in the western part of New York. H. R. 10065, introduced by Representative Chase, Pennsylvania, proposes to authorize an appropriation of $2,225,000 to erect a veterans' hospital in the northern part of Pennsylvania. H. R. 10066, introduced by Representative Dowell, Iowa, proposes to authorize an appropriation of $325,000 for additions to veterans' hospital 57, at Knoxville, Iowa. H. R. 10068, introduced by Representative Hooper, Michigan, proposes to authorize an appropriation of $1,550,000 for an addition to veterans' hospital 100, at Camp Custer, Michigan. H. R. 10069, introduced by Representative Ludlow, Indiana, proposes to authorize an appropriation of $500,000 to erect a veterans' hospital in Indiana. H. R. 10075, introduced by Representative Smith, Idaho, proposes to authorize an appropriation of $260,000 to erect an addition to veterans' hospital 52, at Boise, Idaho. H. R. 10121, introduced by Representative Johnson, Washington, proposes to authorize an appropriation of $875,000 to erect an addition to the veterans' hospital at American Lake, Washington. H. R. 10133, introduced (by request) by Representative Evans, Montana, proposes to authorize an appropriation of $800,000 to erect an addition to veterans' hospital 72, at Fort Harrison, Montana. S. J. Res. 40, authorizing the President to extend invitations to foreign governments to be represented at the International Congress for the Blind, to be held in New York in 1931, has passed both the Senate and the House. S. 3476, introduced by Senator Grundy (for Senator Reed), Pennsylvania, proposes to extend the benefits of the World War Veterans Act to cadets at the United States Military Academy and midshipmen at the United States Naval Academy. S. 3601, introduced by Senator Goff, and H. R. 9930, introduced by Representative Bachmann, both of West Virginia, propose to authorize an appropriation of $800,000 to erect a veterans' hospital in West Virginia. H. R. 10130, introduced (by request) by Representative Wolverton, West Virginia, proposes to authorize an appropriation of $1,000,000 to erect a veterans' hospital in West Virginia. S. 3639, introduced by Senator Copeland, New York, proposes to provide for federal cooperation with the several states and territories in the care, treatment and rehabilitation of persons below the age of 21 years who have some serious physical defect that may be corrected or improved by surgery and medical care, provided the parents of such persons are unable to provide adequate treatment.

## FOREIGN

**Shipload of Parrots Destroyed.**—Following the death of two persons from parrot's disease, or psittacosis, the government of Holland destroyed a shipload of parrots which had just arrived from South America, February 19.

**Information Bureau for Graduate Students.**—The Fellowship of Medicine and Post-Graduate Medical Association, 1 Wimpole Street, London, W.I., England, is a central bureau of information, which without charge will advise American physicians in arranging courses for graduate study in hospitals and clinics in London. Opportunities for clinical work in London are provided the year round in forty hospitals associated with the fellowship. There are also special courses on practically all medical subjects and free demonstrations weekly.

**International Association for Geographic Pathology.**—The formation of an international association for geographic pathology, suggested by Dr. Max Askanazy, Geneva, Switzerland, was favorably received by European pathologists, and resulted in a voluntary bureau to organize the proposed association comprising Drs. Askanazy, Ludvig Aschoff, Gustav Roussey and Joselin de Jong. The first formal meeting of representatives was held in Vienna in April, 1929, and cirrhosis of the liver was selected as the first subject for a geographic study, the report on which will be given at the first formal meeting of the commissioners at Geneva in 1931. Dr. Virgil H. Moon, Philadelphia, is the United States representative.

### Deaths in Other Countries

**Prof. Annibal Bettencourt,** Lisbon, Spain, director, Institut Camara Pestana, recently.——**James Hogg Martin,** professor of midwifery and gynecology, Anderson College, Glasgow, January 1.

# *Foreign Letters*

## LONDON

*(From Our Regular Correspondent)*

Feb. 1, 1930.

### A National Dental Service

The national insurance act provides medical attendance for all insured persons; dental treatment is not a "statutory benefit" but an "additional" one; i. e., it is not provided by law but by certain societies which choose to do so and have the necessary funds. Their members are not entitled to dental benefit immediately on entrance into insurance but only after a period of five years. Dental service is also provided by the state in the elementary schools. The increase of socialism in this country has now become a commonplace and the medical form of it, known as the national insurance act, has already been extended by raising the income limit of persons who come under it. Further extensions can only be a matter of time. The British Medical Association has repeatedly drawn attention to two gaps in the act—the absence of any attention between the school leaving age and the entry into national health insurance and the absence of provision for the dependents of insured persons (insured because they are employed) and of others of like economic status. Similarly, as regards dental service a socialistic development is certain.

The British Medical Association, through several committees, is considering the bringing forward of a scheme. The British Dental Association has appointed a national dental service committee which has recommended the following extensions of the present service: (1) dental treatment of expectant and nursing mothers and children up to the age of 5 years; (2) dental inspection and treatment of all children of school age; (3) dental treatment of adolescents; (4) dental treatment for all persons insured under the national health insurance act and for all other adults unable to afford dental treatment by private practitioners; (5) dental treatment as an essential element in tuberculosis and venereal disease; (6) a coordinated scheme for education in oral hygiene, particularly for the young, with the object of preventing dental disease. It is recognized that valuable work of this kind has already been done but it has been irregular and limited in amount. In order that all such work should be coordinated and controlled, the committee advocates the formation of a dental section of the ministry of health under a dental director. Where the amount of work is sufficient the committee recommends that it should be done by whole-time dental officers. At present the public dental service has attracted two kinds of practitioners—those who take it up as a career and those who intend to revert to private practice. The dental committee recommends not only that inducements should be made to increase the former but also that the latter should be retained longer in the service by offering a gratuity at the end of a minimum number of years. The *British Medical Journal* considers the last suggestion to be surprising and regards it as one that would be unacceptable to the medical profession.

### New Radium Center

The Westminster Hospital radium annex, which has been equipped as a complete center for radium investigation and treatment, has been opened at Hampstead (northwest London). The annex represents an important constructive effort by the hospital to combat cancer. On the ground floor is the 4-gram radium "bomb" (the only one in this country) which has been lent to the Hospital by the National Radium Commission (THE JOURNAL, Nov. 16, 1929, p. 1571) for the purpose of ascertaining the precise value of mass irradiation of deep-seated growths. On this floor is also a high voltage therapy department for irradiation of deep-seated malignant growths with

x-rays generated at 230,000 volts. On the first floor are seven rooms for paying patients and two small wards for patients not able to contribute more than $20 a week. The basement has pathologic, biochemical and physics laboratories and emanation and high voltage roentgen ray set rooms.

### Capital Punishment

The select committee appointed by the house of commons to inquire into capital punishment held its first public meeting. The first witnesses were Sir John Anderson, permanent undersecretary of the home office, and Sir E. R. H. Blackwell, legal assistant undersecretary. They presented a memorandum containing an historical survey, showing that since 1838 the death penalty had been inflicted only for murder, except in one case of high treason during the war. Capital punishment exists throughout the empire except in Queensland. We do not know how many men have been deterred from murder by the fear of the death penalty, but as regards the murders of women with whom the murderers are living in close association the records of the courts show week by week evidence of the immense number of human beings living together on precisely the same terms as those which have been found in cases in which murder has resulted. In 1927, five men were sentenced to death for the murder of wives or women with whom they lived. We know that these five men were not deterred, but we do not know how many of the thousands of others may have been deterred from murdering the women whom they lived with and were persistently assaulting. The witnesses would not express any dogmatic view as to the deterrent effect of capital punishment in general, but they believed that the fact that professional burglars and criminals of that type did not usually carry lethal weapons in this country was due to fear of the death penalty. They therefore felt bound to point out that the risks to which officers of the law were exposed in the discharge of their duties would be increased if capital punishment were abolished. Another point made by them was that public sentiment should not merely accept abolition in the abstract but be strong enough to overbear the passions that may be excited by the details of some brutal outrage. If not, the country might be exposed for the first time in its history to the horrors of lynch law.

### The Age of Haste

At the opening of the artists' exhibition at the Leeds art gallery, Lord Moynihan said that the distinguishing feature of the present day was the breathless haste with which everything was done and the incessant, almost intolerant, din with which so many things were accomplished. He feared that posterity would say of us that we were a materialistic people and that our reaction from the noble idealism and unequaled effort of the war was expressed in raw crude materialism, in which, for a time at least, the affairs of the spirit were in danger of being submerged. It was therefore desirable that we should seek an antidote to these poisonous agencies and find, somehow, solace of the spirit and refuge from the social mischiefs of our time. It was essential that esthetic medicine should be taken to produce that effect. Beauty was a real and precious thing necessary for social health.

### Demand by Indian Women for Social Reforms

In the past, British rule was imposed on India and thus were introduced many much needed social reforms, such as the abolition of suttee, in which a Hindu widow immolates herself on her husband's funeral pyre. But the introduction of Western civilization is now bearing fruit and reforms are demanded by the Indians themselves. The fourth session of the all-India women's conference has been held at Bombay. Delegates attended from all parts of India, including the Indian states (those parts still under native rule), and there was a fair sprinkling of Indian and American women. Mrs. Naidu, the president, said that 1929 was the first year the conference worked for social reform, and its greatest achievement was the passing of the child marriage act, which raises the age at which marriage is permissible. The scheme of work planned for the year includes the prevention of child marriage, the abolition of enforced purdah (the seclusion of women, which has been shown to be injurious to health and to produce osteomalacia from nonexposure to light), the prevention of polygamy, unequal marriages and enforced widowhood. There were interesting discussions on the need of the Indian states to fall into line with British India in the prevention of child marriages, the question of equal guardianship of father and mother, the removal of "untouchability" (the pariah system), the evils of intemperance, the suppression of immoral traffic in women and children, and the dedication of women in temples.

### Preparation of Reports for Publication

The medical research council has entered a new field. It has published a pamphlet entitled "Notes upon the Preparation of Reports for Publication." Advice on this subject has already been given from time to time in the medical journals and books have been published on it, of which the best was written by the medical stylist Sir Clifford Allbutt. Such advice is not much heeded, as almost any article in any medical journal will show. The council invites the cooperation of authors in keeping the cost of publication of reports down to the lowest possible figure and with this end principally in view has compiled the "Notes." "Although much that is contained in them may appear elementary or self-evident, they are drafted as the result of experience gained in the production of more than 130 numbers of the Special Report Series." The council urges that no effort be spared in reducing the length of scientific papers and reports to the smallest compass possible for clarity and effectiveness. Its experience in revising manuscripts submitted is that a 10 to 20 per cent reduction in length can readily be effected by attention to arrangement of matter and by avoiding redundant or reduplicated sentences. Brevity can also be gained by using short English words in place of longer words, often of Latin origin. "It will nearly always be found that brevity can be obtained with gain rather than loss in both scientific effect and literary form. . . . The mass of scientific literature already offers problems of great magnitude and difficulty. A 10 per cent reduction in the size of every paper would mean an equivalent gain in space for every library in the world as well as in the time of all the readers concerned." It is curious that this injunction of conciseness is not quite so concise as it might be "with gain rather than loss in both scientific effect and literary form." Much excellent advice follows on such subjects as copy, footnotes ("as a general rule not desirable"), references and bibliographies, abbreviations, tables, illustrations, headings, table of contents, and scientific names of animals and plants. In an appendix a list of the abbreviations of the names of journals is given. For THE JOURNAL the abbreviation is "J. Amer. Med. Ass." The following are some of the shorter and better equivalents suggested "from the revision of reports on a single morning." "Made or done" for "carried out"; "give" for "furnish"; "much" for "considerable"; "very considerable" for "a considerable amount of"; "many" for "considerable number of"; "began" for "commenced"; "with" for "together with" or "in conjunction with"; "use" for "employ"; "most of" for "the majority of"; "met" for "encountered"; "before" for "previously to."

### Competition by the Public Hospitals

Speaking at a meeting of the British Medical Association, Dr. Graham Little (dermatologist and member of parliament for London University), said that the passing of the local government act of 1929 represented another victory for government control, for the extension of bureaucracy. The report of Sir George Newman, chief medical officer to the ministry of health, for 1928 showed that he regarded the cause of a uni-

versal state medical service as practically won. A definite program of competition by the public hospitals (to be developed under the act) with the voluntary hospitals was clearly set out. The public hospital was to become everywhere a colorable imitation of the best of the voluntary hospitals, and the health officer of each district was to assume the direction and control of all the institutional treatment in his district, whether at public or voluntary hospitals. "The state seeks to take medical charge of the individual from the moment of birth to the final hour of his life, and a medical autocracy, far more complete and, I submit, far more intolerable than even the medieval dominion of the church is foreshadowed. Is the medical profession really wise in acquiescing in such a development, which must react on it even more disastrously than on the public, with whom there are not wanting symptoms of rebellion against this despotism? Is medical science sufficiently sure of itself to assume this autocratic direction as cheerfully as did the medieval church, which had no doubt as to the rightness of its rule, and which resulted in a tyranny so unbearable that it was overthrown?"

### Too Few Radiologists

The application of the Brentford board of guardians (a body which administers poor relief and maintains its own hospitals) for permission to spend $7,500 on the purchase of radium has been refused by the ministry of health on the grounds that no such expenditure can be justifiable until the radium commission has presented its report and for the more important reason that there is a lack of skilled radiologists. It is difficult to train men to use a curative agent that costs $60,000 a saltspoonful. Adequate training can be obtained at only a few of the great hospitals for the reason that the radium is not available for more. The ministry of health suggests that a system of radium centers be established. This would allow radium, which constantly gives off its rays, to be used for every hour of the day.

## PARIS

*(From Our Regular Correspondent)*

Jan. 22, 1930.

### Vaccination with B C G Vaccine

Professor Calmette has communicated to the Academy of Medicine the results of his recent inquiry in France and in foreign countries on the use of B C G tuberculosis vaccine since 1924. The number of children vaccinated, in all countries taken together, now exceeds 210,000. The inquiry was made among the medical practitioners and the health services that use the vaccine. More than 20,000 clinical researches have proved the absolute harmlessness of the B C G vaccine, not only for man but also for all the animal species subject to tuberculosis. No microbiologist has succeeded in restoring to the B C G vaccine its former virulence. Its efficacy is proved by the fact that in France the general infant mortality has been reduced one half wherever preventive vaccination of the new-born is systematically carried out. In Thann, Alsace, the vaccinations have increased rapidly since 1926; 76 per cent of the new-born were vaccinated in 1928. As a result, the mortality has dropped from 6.6 per cent to 2 per cent. Furthermore, the children develop better. They are more resistant to infections. The Institut Pasteur de Paris has created a special laboratory for the preparation of the B C G vaccine. The vaccine is furnished gratuitously to physicians and midwives who request it. At present, the laboratory supplies 300 tubes of vaccine a day.

### Health Record of Pupils of the Secondary Schools

On the entry of the new classes in January, this year, the Académie de Paris introduced the system of individual health record books, by means of which the school will be able to preserve a record of the growth of each child and subject the pupils to a regular medical supervision. This is the outcome of a resolution of the Conseil académique and the desire of Mr. Charléty, rector of the Académie de Paris. At present the system is being tried out only in a number of Paris lycées that have boarding pupils and only in the beginning classes. The system was worked out by Dr. Chaillet-Bert, *chargé de cours* at the Faculté de médecine de Paris. From the inquiry that he instituted in the lycées of Paris, it appeared that regular medical supervision diminishes by from 75 to 80 per cent the number of pupils failing completely in their work. Taking account of the experience of other schools, not only in foreign countries but also in France and particularly in Paris, Chaillet-Bert was convinced that the record-book system is preferable to the card system. The book as designed is made up as follows: the first page is intended for the description of the various vaccinations to which the child has been subjected; the second page is for the observations that the family physician has communicated to the school physician on important previous diseases, the general condition, and the growth of the child. This page will contain nothing of a confidential nature. Pages 4 and 5 are reserved for the results of the semestral medical examinations to which the child will be subjected. Part of the space may occasionally be utilized by the nursing personnel. On the physician will devolve only the medical examination proper. Also examinations of the teeth, the hearing and the vision, by specialists, will be recommended. These measurements will lead to conclusions, which (recorded on pages 6 and 7) will enable the school physician to prescribe exactly the amount and the nature of the physical training needed; also to specify what organs must be spared; what corrective exercises are needed for certain organs and certain systems and, finally, to indicate which sports are recommended and which are prohibited. In this manner a systematic supervision of physical education is assured, and the dangers resulting from overdoing in sport activities will be eliminated. At the same time this control will enable the family physician to become informed in regard to discovered defects and will show him what surveillance should be exercised during the vacation. Likewise, the director of physical training will be advised as to the precautions to be taken with certain pupils. The heads of institutions or of departments will learn the care that must be taken in certain classes and in certain studies with regard to certain pupils in whom the medical examination may have revealed weaknesses and significant disorders. And not only overdoing in sports will be avoided but also undue mental effort. The adoption of the health record book will be optional. Precautions are taken to keep out everything that would violate the principle of professional secrecy. Parents will understand, no doubt, that the losses of man power suffered during the war and the present low birth rate make it incumbent on the country to overlook no effort that will protect the life and health of its children.

### Narcolepsy

There is an increasing tendency in France to deny the existence of idiopathic narcolepsy and to assume, in those cases, that there is always an underlying pathologic cause which should be sought and which will be found if a thorough search is made. One will greatly increase thereby the possibilities of recovery from a disorder that is often rebellious and capable of causing grave repercussions in the activities of persons affected. Sometimes patients are suspected of laziness and lose their positions because they cannot work in a stable manner; or, if they are soldiers, they are often menaced with grave penalties for having fallen asleep at their post. It was in this connection that L'hermitte and Peyre reported, before the Société de neurologie, a case of typical narcolepsy that reproduced exactly the syndrome of Gélineau. The patient was a man aged 23, who for three years had presented daily repeated signs of narcolepsy, associated with a sudden loss of tonus and an emotional state. A precise neurologic examina-

tion did not reveal any modification of either nervous or endocrine functions. The vegetative reactions were normal; arterial pressure was normal. The cerebrospinal fluid showed no physical or chemical changes. The sella turcica was normal in every respect. In spite of the complete absence of any symptom pointing to erythremia, the patient was subjected to a complete blood examination, which revealed a formula of 8,880,000 red and 7,500 white corpuscles. The bleeding time was shortened and the coagulation was almost nil. Such an observation tends to show the futility of the assumption, which is still defended, of idiopathic or essential narcolepsy.

### Clémenceau and Pasteur

Dr. Roux, director of the Institut Pasteur, in addressing recently the Academy of Medicine, gave a eulogy of Clémenceau, who was a *membre libre* of the academy. His eulogy departed somewhat from the traditional forms and comprised a number of personal recollections, with which he associated certain reflections. The two men knew each other well. They were scientific opponents, in a sense, since Dr. Clémenceau, in his early years, was an ardent defender of spontaneous generation, a belief entertained by his teacher Robin, whereas Dr. Roux was a pupil of Pasteur. In his discourse, Roux pointed out that this biologic view of Clémenceau was the natural sequence of his philosophic opinions. As is well known, his philosophic views did not change during the course of his stormy existence. No doubt, he accepted in a general way the teachings of Pasteur. However, in 1927, two years before his death, and while occupying his voluntary retreat, he summoned Dr. Roux to ask him to explain the fermentations and the phenomena of microorganisms. "I did my best to give him satisfactory explanations," said Dr. Roux. "And I succeeded in interesting him; for, the next day, he asked me for supplementary information. . . . Thus, at the close of his life, the old philosopher was still willing to revise his scientific knowledge." This address, which reflected unconcealed admiration for a great man, received a long acclaim from the members of the academy, and the director of the Institut Pasteur was given a veritable ovation.

## VIENNA

*(From Our Regular Correspondent)*

Jan. 3, 1930.

### Protest Against Bill Favoring Quackery

On behalf of the medical profession of Austria, the president of the Austrian *aerztekammern*, a body that protects the interests of physicians, submitted recently to the ministry for social administration a protest against a bill that is about to come before parliament. The bill is an expression of a movement on foot to place the administration of justice in Austria and Germany on a common basis in many respects. The question involved is whether interventions and the writing of prescriptions shall remain the prerogative of scientifically trained physicians or whether ignorant and half-trained persons shall be permitted to menace the public health. For more than seventy years, the law has protected the public against thousands of charlatans and quacks, whereas the population of Germany has been unprotected. Austrian physicians have no fear that it is the intention to remove all restrictions from the practice of medicine, but modification of the existing provisions dealing with quackery will constitute a lowering of the present status. The protest reads as follows:

> With painful surprise, the physicians are disappointed in their expectation that the criterion "for purposes of gain" would be eliminated as a test of the guilt of quacks and that a provision would be instituted that would completely exclude evasion of the law. You must surely see that the purpose and the effects of the law are weakened by the fact that the law as drafted does not declare quackery to be a judicially punishable act but considers it as "an irregularity" or as a breach classifiable as a delict. The scientific, professional and economic organizations of the physicians of Austria, namely, the three faculties of medicine, all public health services, the *aerztekammern* and the academic councils request the government to leave essentially as it now reads the law that declares the unauthorized practice of medicine to be a punishable offense, but to give it such a form that any practice of medicine as an occupation, whether gratuitous or not, shall be punishable by law, unless the intervention or treatment is carried out under the supervision or at the instance of an authorized physician.

That the fears of the physicians are justified is shown by figures just published by the Prussian administration of medicine: The number of quacks in Prussia has more than doubled since 1921, amounting now to more than 6,700, and similar conditions prevail in Bavaria. At present, owing to the laws, there is only a small number of such pests plying their trade in Austria, but if the bill mentioned becomes a law the number will rapidly increase.

### Examination of the Eyes of School Children

The hygienic welfare service in the schools has, from the start, taken the stand that children with disturbances of vision require special attention. The city of Vienna entrusted a special ophthalmologist with the work of examining the eyes of school children in the public, special and auxiliary schools. From 1921 to 1929 more than 2,000 children annually had their eyes examined. The school physician was informed of the result of the examination, the diagnosis was entered in the so-called description of pupils, and the child was asked to procure glasses, if needed. However, according to the old system, only such children were examined as volunteered for the examination, so a large number of children with disturbed vision remained undiscovered. To ferret out all children whose eyes are abnormal, in order to watch over them during the period of their school life, the city established a centrally located eye-examining center, which is equipped, according to the plans of Professor Lauber, with the most modern apparatus and is under the direction of two specialists. From now on, every class after it enters the second grade of the primary or elementary school will be examined, so that gradually all children between the ages of 7 and 14 will be brought under the system. Provisions have been made at the center for the examination of from 240 to 300 children a week. In order not to interfere with the interests of practitioners, no treatment will be given at the municipal center. The report of the ophthalmologist is sent to the school physician, who takes up the matter with the parents and sees that the instructions of the examiner are carried out.

### Welfare Center for Diabetic Patients

In the Rudolfsspital in Vienna, a welfare center has been opened for diabetic patients who are in need of medical supervision but who are financially unable to secure it. For years there has been a gradual but marked increase of cases of diabetes in Vienna, especially among the poor. This is in contrast with the decline of the disease during the war. This observation is the more striking in view of the scientific advances in the diagnosis and treatment of diabetes. The new welfare and consultation center for patients with diabetes will have nothing to do with direct treatment. The purposes of the institution are supervision of an existing disorder with reference to the possibility of treatment and the social condition of the patient, and the reference of the patients to the physicians and hospitals concerned. The institution is intended primarily for persons who are unfamiliar with the disease and with their own condition. Particularly those patients who are not members of one of the many sick benefit associations will be sought out and given advice. Their living conditions and nutritional facilities will be supervised, and necessary aid will be given. With the help of tables, the patient will be made acquainted with the most necessary matters pertaining to the disease and with the technic of dietary treatment. Patients who prepare their own meals will be given culinary instruction. For patients who do not prepare their own meals, "middle class kitchens" are to be created in which food will be served at a reasonable price and in keeping with their dietary needs. This

special diet for diabetic patients has been available to patients since January 1 of this year. It is the general expectation that the modest expenditures entailed by the new welfare center will prove to be fully justified, since, by reason of this prophylaxis, the improved capacity for work, and the lengthened duration of life, the outlay for hospital care and for remedies will be diminished. The medical profession suffers no loss of income by the work of the welfare center. It is the plan to combat by means of systematic publicity the ignorance and superstition of the people. By these methods many patients who would fall into the hands of quacks will be induced to seek the advice of rational medicine.

### Operations on the Heart

Following the suggestion of Professor Eiselsberg, all cases of heart injury in which operation leads to recovery are demonstrated before the Wiener Gesellschaft der Aerzte. Recently, Dr. Scheu presented a man, aged 21, who, on admission to the hospital, was markedly cyanotic; he presented severe dyspnea, absence of the carotid and the radial pulse, extensive cardiac dulness, and inaudible heart tones. In the fourth intercostal space, at the mammillary line, was a stab wound 3 cm. long. The diagnosis was heart injury with heart tamponade. The operation, which was undertaken twenty minutes after the injury, revealed the distended pericardium without pulsation, and on the anterior side a small stab wound obstructed by a coagulum. The pericardium was opened and the coagulum removed, whereupon the heart began to beat. At the same time a profuse hemorrhage set in which necessitated the prompt application of a catgut suture through the apex of the heart, with which to draw the heart forward. The source of the hemorrhage now became visible, and while the heart beat more slowly, three catgut sutures were applied to the injured anterior wall of the left ventricle. The pericardium and the thorax wall were then closed. The patient made an uneventful recovery. Dr. Scheu reported a second case, which ended fatally. The cause of death was unusual. The patient had merely a stab injury in the heart region but almost no symptoms of any kind. Only after the lapse of an hour did signs of an internal hemorrhage appear: hemothorax, pallor, rapid pulse. The heart tones were distinct and there was normal cardiac dulness. When the thorax was opened, the left ventricle was found to be injured; there was no tamponade. The patient died at the end of thirty-six hours as the result of a cerebral embolism. In a third case of heart injury, an unheard-of event took place. When the last suture had been applied, an incautious movement caused the needle to slip out of the holder and to fall into the pericardium, where it disappeared behind the heart. After a long search the needle was located in the region of the point of issue of the large vessels and it was removed with the hand. In a case presented by Dr. Popper a projectile had entered the left nipple, with hemothorax and perforation of the anterior margin of the lung. In the margin of the left side of the heart there was an opening produced by the projectile, but the path of exit was not found. During the operation, the heart stopped, but after massage began beating again. Roentgenologic examination three weeks later revealed that the projectile was located posteriorly at the intersection of the two auricles. After four weeks, the patient recovered without complications. In the last case a man had been stabbed four times, one stab having entered the heart. The patient presented the signs of heart tamponade. At operation, a distended pericardium was found and at the apex of the heart a wound 1 cm. long. This wound and the three others were taken care of, and at the end of nine days the patient was dismissed, well on the road to recovery. Operative treatment of heart wounds is often simple enough, but, from time to time, there is some startling event, and the way it is handled is something of a test of the efficiency of the surgical service.

## AUSTRALIA

*(From Our Regular Correspondent)*

Jan. 13, 1930.

### The Cancer Campaign in Australia

The beginnings of the organization to control and facilitate cancer treatment and to encourage cancer research in Australia were laid in Sydney, New South Wales, in 1921 by the bequest of £7,150 by J. F. Archibald. Prior to that, the leading general hospitals had individually provided some measure of treatment facilities in the way of radium and high voltage roentgen therapy but the sum total of the effort was quite inadequate to deal with the cancer situation and the development of treatment facilities was not keeping step with the increasing incidence. For, while the death rate in the commonwealth has been falling steadily since 1880, and while the principal individual causes of death, such as tuberculosis and typhoid, have been declining steadily, cancer is one cause of death which has mounted with an uninterrupted increase. During the past twenty-seven years the cancer death rate has increased by 58 per cent. In 1880, the cancer death rate was 34; in 1926 it was 93.

Cancer of the alimentary canal, skin, prostate and lung has increased. Cancer of the female generative system has remained almost stationary. Cancer of the tongue and liver has shown an actual or apparent decline. Sarcoma has played little or no part in the increasing mortality from cancer in general.

Cancer research, prior to 1921, had been carried out on a restricted scale by a few independent workers who were not kept in touch by any definite organization. The senate of Sydney University in 1921 appointed a cancer research committee from the professorial staff and others, and this committee, having passed through various phases, is at present in active control of the cancer situation at Sydney University. One of the first determinations of the committee, in 1922, was that the problems of cancer were such that they should be investigated by team work rather than by individuals. The first worker on the effect of roentgen rays on tissues was Dr. Moppett, whose researches were facilitated by the gift of £2,500 from the federal government. At the same time the generosity of a Sydney citizen enabled the university to establish the Bosch cancer research fellowship in biochemistry. The state and federal governments had again bestowed their practical benediction on the work by contributions of £2,500 each, and a modern biophysical laboratory was thus enabled to be equipped at the university. In this building, valuable work has been since going on in connection with the separation of the different wavelengths of the roentgen rays, and their individual study.

The next step in the campaign was an appeal for £100,000 for cancer research and treatment to the people of New South Wales. The public responded so nobly that the sum of £134,000 was given to the university in trust for the purpose. Radium and high voltage roentgen clinics were established at the Royal Prince Alfred and St. Vincent's hospitals in Sydney. The plans of the radium clinic at the first hospital were drawn up by Dr. Burrows, who was then on vacation in Australia from his position as director of the radium clinic at Manchester in England. Since that time, Dr. Burrows has been appointed radium adviser to the commonwealth. In 1927 the federal government purchased 10 Gm. of radium at a cost of £100,000.

The research and treatment activities of the New South Wales cancer campaign are placed in the charge of a scientific advisory subcommittee presided over by the director of cancer research and the director of cancer treatment, respectively. With the vice chancellor of the university these two directors form a cancer executive committee, which meets weekly. Meetings of the cancer research committee are held monthly and reports are made to the senate of the university on all questions dealing with policy, administration, finance, staff, laboratory and hospital equipment, and scientific and treatment work.

Sydney has become the cancer center of Australia. Increasing numbers of Australian medical men, medical students and nurses

are going to Sydney to study modern methods of cancer treatment. Since the New South Wales cancer committee made the appeal for funds, Queensland has collected £50,000 for similar purposes, South Australia is collecting and has established a radium clinic, and plans are being made for an appeal in Victoria. A federal cancer office has been established by the commonwealth government as a coordinating mechanism of Australian cancer activities.

When the present plans for the purchase of radium are complete, Australia will possess a greater amount of radium in proportion to the population than any other country in the world. At the Melbourne University in August, 1929, a radium laboratory was opened at a cost of £1,600 provided by the federal government. The main objects of the laboratory will be research work and the production and distribution of radon. In Victoria, plans have been prepared for the creation of a cancer research council to promote research, to develop the concerted treatment of cancer to a more modern standard, and generally to direct education and propaganda work. It is not proposed to establish a separate institution for carrying out research and treatment but to utilize and develop existing research and treatment facilities. It is proposed to check up the results of the research that has been done at the Sydney university in connection with the selective action of the various wavelengths of the roentgen rays. It is further suggested that an accurate statistical study be made in Victoria of the incidence of cancer with regard to morbidity as well as mortality. This study would be facilitated if cancer were made a notifiable disease. The supply of radium in Victoria is considered inadequate, even with the help of that allotted from the federal purchase, and more will need to be obtained. It is proposed to pay special attention to the standardization of the records of treatment, including an efficient follow-up system. This scheme will require the expenditure of about £100,000. It has been favorably considered by the state government.

### Queensland Vital Statistics for 1928

The population of Queensland at the close of 1928 was 916,689. The birth rate per thousand of the population was 21.76, which is lower than it has ever been. This declining birth rate is common to all Australian states. The infant mortality rate per thousand live births was 45.5, which, with the exception of 45.4 in 1925, is the lowest ever recorded. It is lower than for any other Australian state, but it must improve considerably before it approaches the New Zealand record of 36.18. The death rate, 8.77 per thousand of the population, is the lowest ever recorded.

### Life Assurance in Australia

An endeavor is being made to coordinate the legislation controlling life assurance business in the various states. With the exception of New South Wales, where no legislation exists, the Australian states have based their enactments on the British life assurance legislation of 1870-1872. Since then various amendments have been introduced. In 1927, the latest year for which complete returns are available, there were in force in Australia 867,000 ordinary life assurance policies and 1,484,000 industrial policies, insuring over all a total of £323,000,000. These represent about 140 ordinary and 240 industrial policies per thousand of the population, and a total sum assured of about £52 a head. At the end of that year the total assets in Australia of life assurance companies was approximately £115,000,000. The population of Australia in 1927 was six and a quarter millions. Queensland conducts a state life insurance organization of its own which does an extensive business, especially in industrial insurance under the worker's compensation act. With the exception of the Colonial Mutual Life Assurance Society, none of the organizations do any health publicity work or encourage periodic health examinations among their policyholders. The Colonial Mutual issues attractive booklets on health subjects.

## Marriages

THEODORE F. FOSTER, Nashville, Tenn., to Miss Elizabeth Hixon of Pensacola, Fla., Dec. 28, 1929.

JOHN BYRON AVERA of Brunswick, Ga., to Miss Elise Spooner of Bainbridge, Dec. 25, 1929.

VERNON L. HART, Ann Arbor, Mich., to Miss Ruthmary Lippelco of Jackson, recently.

## Deaths

**Richard Mills Pearce, Jr.,** New York; Harvard University Medical School, Boston, 1897; instructor of pathology at his alma mater, 1899-1900; demonstrator and later assistant professor of pathology, 1900-1903, professor of pathology, 1910-1911, and of research medicine, 1910-1920, University of Pennsylvania; professor of pathology and bacteriology, Albany Medical College, 1903-1908; professor of pathology, University and Bellevue Hospital Medical College, 1908-1910; served during the World War; director of the Bender Hygienic Laboratory, Albany, N. Y., and the Bureau of Pathology and Bacteriology, New York State Department of Health, 1903-1908; since 1920 general director of the division of medical education of the Rockefeller Foundation; chairman of the medical division of the National Research Council in 1918; author of "Medical Research and Education" and "The Spleen and Anemia"; aged 55; died, February 16, of heart disease.

**Lawrence Kinsman McCafferty** ⊕ New York; Johns Hopkins University School of Medicine, Baltimore, 1916; served during the World War; instructor in dermatology, Columbia University College of Physicians and Surgeons; on the staffs of the New York Polyclinic Medical School and Hospital, Manhattan Maternity Hospital and the Misericordia Hospital, New York, the Monmouth Memorial Hospital, Long Branch, N. J., and St. Joseph's Hospital, Yonkers; aged 39; died, January 20, at St. Vincent's Hospital.

**William Royal Stokes** ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1891; professor of bacteriology at his alma mater; member of the Society of American Bacteriologists; director of laboratories of the city and state departments of health, Baltimore and Maryland, 1896, and 1898-1920, and of the Baltimore Health Department since 1920; aged 59; died, February 10, at the Mercy Hospital, of psittacosis.

**Edwin Alonzo Meserve** ⊕ Boston; Harvard University Medical School, Boston, 1913; member of the New England Otological and Laryngological Society; served during the World War; formerly on the staffs of the Children's Hospital, Massachusetts Eye and Ear Infirmary and the Newton (Mass.) Hospital; aged 45; died, February 13, of *Streptococcus hemolyticus* septicemia.

**Arthur William K. Akerley** ⊕ Somers, Mont.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1900; member of the State Medical Society of Wisconsin; served during the World War; aged 63; died, January 30, of chronic myocarditis and angina pectoris.

**Louisa Miller Blake,** Washington, D. C.; Medical Department of Columbian University, Washington, 1893; member of the Medical Society of the District of Columbia; aged 76; died, Dec. 17, 1929, at the Sibley Hospital, of fracture of the left hip, shock and heart disease.

**George Balleray Flood,** Paterson, N. J.; Columbia University College of Physicians and Surgeons, New York, 1901; member of the Medical Society of New Jersey; on the staff of the Paterson General Hospital; aged 53; died, Dec. 25, 1929, of cerebral hemorrhage.

**Byron Willis Dawley,** Long Beach, Calif.; Kentucky School of Medicine, Louisville, 1891; Hahnemann Medical College and Hospital, Chicago, 1897; formerly on the staff of the Toledo (Ohio) Hospital; aged 68; was killed, January 10, in an automobile accident.

**Gustavus A. Humphreys** ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1895; on the staff of the New York Polyclinic Medical School and Hospital; aged 62; died in February of cerebral hemorrhage.

**Edmund Adam Babler** ⊕ St. Louis; Missouri Medical College, St. Louis, 1898; member of the Western Surgical Association; on the staff of the Evangelical Deaconess Hospital; aged 54; died, February 9, of pneumonia.

**Ernst Danziger** ✠ New York; Medical Department of the University of the City of New York, 1894; on the staffs of the Sydenham Hospital, Montefiore Hospital and the Lenox Hill Hospital; aged 58; died, January 7, of chronic myocarditis.

**Frank B. Hamilton, Jr.,** Jackson, Tenn.; University of Nashville Medical Department, 1905; member of the Tennessee State Medical Association; for twelve years county health officer; aged 49; died, Dec. 12, 1929, of influenza.

Elden **Maxwell Price** ✠ Astoria, Ill.; Rush Medical College, Chicago, 1899; past president of the Fulton County Medical Society; served during the World War; aged 53; died, February 2, of pneumonia following influenza.

**James E. Walker** ✠ Hornell, N. Y.; Eclectic Medical Institute, Cincinnati, 1876 formerly superintendent of the Steuben Sanitarium; aged 75; died, Dec. 30, 1929, at the Bethesda Hospital, of sepsis following a carbuncle.

**William Elijah Lake,** Newberry, S. C.; Medical College of the State of South Carolina, Charleston, 1881; member of the South Carolina Medical Association; aged 77; died, January 31, of cardiovascular renal disease.

**Jacob G. V. B. Hord,** Kings Mountain, N. C.; University of Louisville (Ky.) School of Medicine, 1891; member of the Medical Society of the State of North Carolina; aged 66; died, January 14, in a hospital at Charlotte.

**Hubert Thomas Holland,** Boston; Harvard University Medical School, Boston, 1896; member of the Massachusetts Medical Society; served during the World War; aged 64; died, January 16, of carcinoma of the liver.

**James Henry Lyons,** North Webster, Ind.; University of Michigan Medical School, Ann Arbor, 1884; member of the Indiana State Medical Association; aged 70; was found dead, January 16, of cerebral hemorrhage.

**Joseph M. Lewis,** Cleveland; Charity Hospital Medical College, Cleveland, 1865; Civil War veteran; formerly superintendent of the Cleveland State Hospital; aged 91; died, in January, of cerebral hemorrhage.

**Charles W. Ailor,** Parkersburg, W. Va. (licensed, West Virginia, under the Act of 1881); member of the West Virginia State Medical Association; aged 71; died, Dec. 4, 1929, of a self-inflicted bullet wound.

**Hord Sharp,** Lexington, Ky.; University of Louisville School of Medicine, 1916; member of the Kentucky State Medical Association; served during the World War; aged 37; died, January 20, of heart disease.

**Walter Eugene Hawkins,** Shreveport, La.; University of Alabama School of Medicine, Tuscaloosa, 1883; member of the Louisiana State Medical Society; aged 70; died, January 8, of cerebral hemorrhage.

**Robert A. Gatchell,** Beebe Plain, Vt.; Howard University School of Medicine, Washington, D. C., 1882; member of the Vermont State Medical Society; aged 69; died, Nov. 7, 1929, of angina pectoris.

**Benjamin Augustus Graves** ✠ Boston; Dartmouth Medical School, Hanover, 1897; served during the World War; aged 55; on the staff of the Forest Hills Hospital, where he died, January 27.

**Cicero Jasper Ellen** ✠ Greenville, N. C.; University College of Medicine, Richmond, 1911; served during the World War; on the staff of the Pitt Community Hospital; aged 43; died, January 11.

**James O. Bullock,** Princeville, Ill.; Medical Department of the University of the City of New York, 1872; formerly secretary of the board of health of Lonaconing, Md.; aged 87; died, January 18.

**John Floyd Murdoch** ✠ Pittsburgh; Jefferson Medical College of Philadelphia, 1893; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 60; died, January 8.

**Forrest Albert Corn,** Lonoke, Ark.; Vanderbilt University School of Medicine, Nashville, 1891; member of the Arkansas Medical Society; aged 65; died, January 28, of carcinoma of the rectum.

**Zachary Taylor Gallion,** Natchitoches, La.; Medical Department University of Louisiana, New Orleans, 1875; for twenty years parish coroner; aged 81; died, February 6, of influenza.

**George J. Sweeney,** San Francisco; University of California Medical School, 1900; member of the California Medical Association; aged 59; died, Dec. 27, 1929, of pernicious anemia.

**Albert Lee McClanahan** ✠ Mount Vernon, Wash.; Medical Department of the St. Louis University, 1904; aged 57; died, Nov. 19, 1929, at the Virginia Mason Hospital, Seattle.

**John J. Nungesser,** Cleveland; Western Reserve University School of Medicine, Cleveland, 1885; aged 72; died, January 28, of cerebral arteriosclerosis and bronchopneumonia.

**Charles Woodbury Stimson** ✠ New York; Medical Department of Columbia College, New York, 1884; aged 68; died, January 27, at Red Bank, N. J., of heart disease.

**William E. Lybrook,** Young America, Ind.; Kentucky School of Medicine, Louisville, 1879; member of the Indiana State Medical Association; aged 80; died, January 30.

**John Bonar White,** Atlanta, Ga.; Johns Hopkins University School of Medicine, Baltimore, 1917; member of the Medical Association of Georgia; aged 39; died, January 22.

**Edward Hobday Claud** ✠ Portsmouth, Va.; University College of Medicine, Richmond, 1899; on the staff of the Parrish Memorial Hospital; aged 53; died, January 12.

**Charles Weldon Rodgers,** Como, Tenn.; Vanderbilt University School of Medicine, Nashville, 1880; aged 73; died, Nov. 18, 1929, in a hospital in Paris, of pneumonia.

**Gordon W. Smith,** Slocomb, Ala.; Louisville (Ky.) Medical College, 1892; member of the Medical Association of the State of Alabama; aged 60; died, January 26.

**William Defendorf Wolff** ✠ Rochester, N. Y.; Medical Department of the University of the City of New York, 1893; aged 61; died, Dec. 24, 1929, of lymphosarcoma.

**S. F. Meacham,** Oakland, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1882; aged 72; died, Nov. 11, 1929, of arteriosclerosis and acute myocarditis.

**Charles Light McDonell** ✠ Chicago; Bennett Medical College, Chicago, 1914; on the staff of St. Anthony's Hospital; aged 39; died, February 6, of angina pectoris.

**H. Clay Brison,** Millersport, Ohio; Medical College of Ohio, Cincinnati, 1874; formerly member of the school board; aged 81; died, January 31, of arteriosclerosis.

**John Marshall Strayhorn** ✠ San Antonio, Texas; Medical Department, University of Tennessee, Nashville, 1893; aged 67; died, January 16, of cerebral hemorrhage.

**Robert T. Tarr** ✠ Cleveland; Cleveland College of Physicians and Surgeons, 1897; formerly president of the Glenville Hospital; aged 54; died, January 24.

**Charles Robert Rothwell,** Boston (licensed, Massachusetts, 1895); member of the Massachusetts Medical Society; aged 59; died, January 23, of chronic nephritis.

**Edmund Stieglitz** ✠ New York; Bellevue Hospital Medical College, New York, 1884; on the staff of the Beth Moses Hospital; aged 66; died, January 24.

**Joseph F. Hilly,** Philadelphia; Jefferson Medical College of Philadelphia, 1910; served during the World War; aged 42; died, January 8, of heart disease.

**Emmet Anthony Printy,** Chicago; Northwestern University Medical School, Chicago, 1915; aged 38; died, February 1, of a self-inflicted bullet wound.

**George Edwin Samuels,** Appleby, Texas; Kentucky School of Medicine, Louisville, 1877; aged 80; died, January 4, of acute dilatation of the heart.

**Robert M. McLeah** ✠ Gilby, N. D. (licensed, North Dakota, 1892); formerly county coroner; aged 62; died, January 25, of carcinoma.

**Pinkney Martin Mayfield,** Portageville, Mo.; St. Louis College of Physicians and Surgeons, 1903; aged 52; died, January 3, of carcinoma.

**William Clark Hill,** Alton, Ill.; Rush Medical College, Chicago, 1880; aged 89; died, January 26, of cerebral hemorrhage.

**La Dessie H. Lanier,** Oliver, Ga.; University of Georgia Medical Department, Augusta, 1888; aged 67; died in December, 1929.

**Lewis L. Tinsman,** Smithshire, Ill.; Rush Medical College, Chicago, 1886; aged 73; died, January 25, of diabetes mellitus.

**Henry N. Kirkpatrick,** Anthony, Kan.; St. Louis Medical College, 1878; also a druggist; aged 80; died, January 21.

**Thomas Nunan Miller** ✠ Rockford, Ill.; Chicago Medical College, 1880; aged 80; died, January 14, of pneumonia.

**Calvin Knox Ewing,** Indianapolis; Medical College of Indiana, Indianapolis, 1884; aged 68; died, January 20.

**Zeno Brown,** Greenville, N. C.; Bellevue Hospital Medical College, New York, 1884; aged 69; died, January 15.

**John Frank Suydam,** Huntington Park, Calif. (licensed, Michigan, 1900); aged 77; died, January 17.

**Peter M. Speed,** Winnipeg, Man., Canada; University of Glasgow, Scotland, 1919; died, January 23.

# Bureau of Investigation

## U. S. NATIONAL ADJUSTMENT COMPANY

For several years now THE JOURNAL has been receiving complaints from physicians relative to the United States National Adjustment Company, a collection agency of Chicago. The latest complaint comes from Dr. E. B. Neff, secretary of the Moline (Ill.) Physicians' Club. Dr. Neff writes:

"It is requested that we be furnished with any information you may have regarding the United States National Adjustment Company of Chicago.

"A representative of the above concern has been soliciting accounts for collection among the physicians in this community, using a page advertisement from THE JOURNAL of the American Medical Association as an indication of their standing. A local bank was also mentioned in the selling talk as using their service, which bank, when consulted, stated that they had given them some very poor accounts to collect but were not in a position to recommend the adjustment company and resented the fact that the bank had been used as a reference."

The United States National Adjustment Company of Chicago was criticized in THE JOURNAL of June 10, 1922. After the appearance of the article, that concern sent a representative to the A. M. A. headquarters who went into the matter thoroughly and promised to make every effort to give satisfactory service in the future. For some time after this, letters received from physicians who were doing business with the United States National Adjustment Company indicated that the company was making an honest effort to give good service. In view of this, the requests of the concern for space in the advertising pages of THE JOURNAL were finally acceded to and the company was permitted to advertise in THE JOURNAL. These appeared in the issues of June 30, 1923 (½ page), and July 7, July 21 and Aug. 4, 1923 (each less than 1 inch, single column).

After the advertisements appeared, THE JOURNAL received some complaints and the *advertising was dropped in August, 1923.* Since that time numerous complaints have been received regarding the methods of the United States National Adjustment Company. When we have brought these to the attention of the concern, they seem to have made efforts to remedy the causes of complaint. It is but fair to state that in some instances the physicians who have complained have failed to fulfil their part of the contract entered into with the collection agency.

There seems to be little doubt, however, that whatever may be the intentions of the head office of the concern, some of the agents or representatives of the company obtain accounts from physicians by tricky methods. There is not the slightest justification for the agents of the United States National Adjustment Company using the advertisement that was published over six years ago and then rejected. THE JOURNAL has at various times protested against the repeated misuse of this advertisement. Yet facsimile reproductions of the single half-page advertisement that appeared in THE JOURNAL, June 30, 1923, have been used year after year by the representatives of the U. S. National Adjustment Company.

The contract of the United States National Adjustment Company with physicians is not, in the opinion of THE JOURNAL, an equitable one. The contract states that the company's commissions are due and payable on the day that payments or settlements are made. There is nothing in the contract that requires the United States National Adjustment Company to send the physician his share of the collection until it gets ready to do so.

## MEDICAL PUBLICITY BUREAU

In an article dealing with the subject of this caption, that appeared in this department, Dec. 7, 1929, the statement was made that Dr. William J. Robinson was the principal stockholder in this bureau. After the appearance of the article Dr. Robinson wrote to THE JOURNAL stating that the use of his name in this connection was wholly without justification. Accompanying the doctor's letter was an affidavit to the same effect. Investigation proved that THE JOURNAL's informants (both thoroughly reliable) had been imposed upon and a correction was therefore published in this department, Jan. 25, 1930. Dr. Robinson has since written that he wished his affidavit to be part of the correction; we give this below:

"The undersigned, Dr. William J. Robinson, hereby declares under oath that at no time has he been, in any way whatever, directly or indirectly, closely or remotely, actively or passively connected with the Medical Publicity Bureau; that at no time has he held any stock in said Medical Publicity Bureau, that he has not been aware that that Bureau has any stock, that he learned of the existence of the Bureau only a few months ago, having been away in Europe and on various travels from July 19, 1924, to October 30, 1928; that he does not know and has never known or met Dr. James Macbeth, that he is not in any way connected with *Medical Life.*

*(Signed)* DR. WILLIAM J. ROBINSON."

*Sworn to before me this 19th day of December, 1929.*
Oscar F. Weber, notary public.

# Correspondence

## THE COFFEY-HUMBER TREATMENT

[NOTE.—The following telegram was received in response to a request for information as to the present status of the work:]

*To the Editor:*—We have repeatedly made the following statement: We do not claim to treat or cure cancer. We are carrying out an experimental effort to prove our contention that we have a potent extract from the cortex of the suprarenal. The incidents arising out of this experimental work even at this date do not justify any one to claim we are offering our extract as treatment or cure for cancer. We are placing all available specimens in the hands of the pathologist. We stand or fall on the decision of our recognized authorities. We likewise have stated on the report of your quoted remarks that we approve of your discussion of this important subject.

W. B. COFFEY, M.D., and J. D. HUMBER, M.D.,
San Francisco.

## SUPRARENAL CORTEX AND CANCER

*To the Editor:*—In THE JOURNAL, February 1, there was a communication from Drs. Walter B. Coffey and John D. Humber concerning their method for the treatment of cancer by means of injections of extract of suprarenal cortex. They did not mention previous work relating to this question.

Two years ago, while working at the Rockefeller Institute for Medical Research with Dr. Murphy on chicken sarcoma, I observed that the cortex of the suprarenal glands of chickens reacts intensively to the growth of this tumor. Dr. Sturm and I have shown that the weight of the suprarenal glands increases about five or six times in the chicken that is a bearer of the sarcoma.

In a subsequent study of the suprarenal cortex of mice and rats inoculated with various types of malignant tumors, I observed that in these animals likewise a special reaction occurs in the X zone of the cortex. The spongiocytes of the reticular zone are filled with iron pigment and changes appear in the mitochondrial apparatus, indicating an increase in its activity.

A report relating to this work was presented before the Société de biologie in Paris in May, 1929 (*Compt. rend. Soc. de biol.* **101**:264 [May 31] 1929). Four weeks later a group of physiologists connected with the University of Lyons, Professors Arloing, Josserand and Charachon, published an article (*Compt. rend. Soc. de biol.* **101**:646 [June 28] 1929) announcing that independently of me (*Compt. rend. Soc. de biol.* **100**:1035 [April 19] 1929) they had obtained similar results to mine. But, in addition, they reported that it was possible to protect mice against the growth of transplanted cancer by means of the inoculation of suprarenal cortex of rabbits that had been immunized with mouse tumor.

In July, 1929, I presented, at the Woods Hole Marine Laboratory a report concerning a method of affecting tumors by

causing an increase in oxidation processes within the tumor cells by means of the injection into the tumor of a substance consisting of a combination of suprarenal cortex with iron salts.

The paper was accompanied by a demonstration of the changes that take place in the tumor. Later the same report and demonstration were presented at the thirteenth International Congress of Physiology at Boston, Aug. 19, 1929 (*Am. J. Physiol.* **90**:521 [Oct.] 1929).

As a working hypothesis, I assumed that the iron metabolism plays a certain rôle in tumor growth and that the suprarenal cortex directs this metabolism, and that the most marked effect on the tumor can be obtained by the combination of the directing substance, namely, the suprarenal cortex and the iron salt through which it acts. This series of experiments was undertaken with rat sarcoma 10, mouse sarcoma 180, Flexner rat carcinoma, and rat sarcoma 39. Altogether about 1,000 experiments were made.

As a rule, only a single injection of this combination of substances was made into the tumor itself. Many hundreds of cured rats, the proportion of which is as high as 93 per cent, lived more than ten months.

The cytologic study of the injected tumors has shown the presence of the oxydase reaction in the tumor cells a few days after the injection (reaction of Schultze and Unna). Later I presented a more complete report of this work before the Société de biologie of Paris (*Compt. rend. Soc. de biol.* **102:** 491 [Nov. 9] 1929) and a cytologic and histologic demonstration was given by me at the Annual Congress of American Zoologists, Dec. 30, 1929, at Des Moines, Iowa.

So much for the history of the research into certain relations between the suprarenal cortex and cancer cells.

My personal activity was and is limited strictly to experimental investigation carried out in the laboratory, and so far I have not treated patients and do not intend to do so in the future. However, since the latter part of September a few physicians, in this country and in France, were authorized by me to apply my method in an experimental way to the treatment of external cancer in man.

Reports which I have received so far indicate that certain types of human cancer can be affected in the same manner as animal tumors by the method of oxidation recommended by me. The more malignant skin cancer, namely, spinal cell carcinoma, is more sensitive than the basal cell carcinoma. Closed tumors are liquefied within a short time, but open and infected tumors are more resistant. Intravenous injections give indefinite results. An interesting phenomenon observed in this connection is that if melanin spots are present in the skin outside the cancer area, the spots may disappear following the injection of the substance into the tumor. This suggests that possibly an activation of suprarenal cortex takes place under this condition. The clinical observations will be reported only after I have collected a large number of records of cases treated in the various medical schools.

As to the manner in which the substance used in my experiments exerts its effects on the tumor cells, I believe, as already stated, that it acts by increased oxidation processes in the tumor cells, but I admit that possibly other processes may enter, and that this is a problem which must be left to future investigation.

BORIS SOKOLOFF, M.D., Sc.D., PH.D.,
St. Louis.

## THE COFFEY-HUMBER CANCER TREATMENT

*To the Editor:*—In regard to the communication of Drs. Coffey and Humber (THE JOURNAL, February 1, p. 359) announcing the effect of an extract of the suprarenal cortex on malignant tissue, I have observed the same effects, namely, liquefaction, necrosis and sloughing, together with new capillary growth, on administration of an extract from the omentum of the pig. I announced this remedy to the Pasadena Branch of the Los Angeles County Medical Society, April 17, 1928. It has subsequently been in use in the wards of the Los Angeles General Hospital for more than a year.

Furthermore, I have identified my extract as containing the active principle of the reticulo-endothelial system through its action on bile formation. Ranvier first described the omental portion of the reticulo-endothelial system more than fifty years ago. This substance has, accordingly, been given the name of "reticulin." It is an enzyme which digests the red blood cells. I have also ascertained that lymph is likewise produced out of this hemolysis, and since the work of Freund and Kaminer of Vienna in 1910 it has been known that normal serum or lymph is carcinolytic.

When Aschoff and Landau described the reticulo-endothelial system in 1913, it was "to group together a special type of cells of wide distribution"; possibly Drs. Coffey and Humber have located another deposit of this system in the region of the suprarenal.

C. F. CHARLTON, M.D., Pasadena, Calif.

## TREATMENT OF CANCER WITH THYMUS EXTRACT

*To the Editor:*—Work by Walter Jones (Concerning the Enzyme of the Thymus Gland, *Ztschr. f. physiol. Chem.* **41**:101, 1904) showed that the thymus gland contains a soluble enzyme which attaches to the nucleoproteins of the gland when these are separated with acetic acid and dissolved in sodium carbonate. In this manner he was able to separate it from the soluble constituents of the gland and so determine more accurately the products of decomposition that are formed through its action. He found that at body temperature, and in the concentration in which it exists in the gland, the enzyme rapidly decomposes the nucleoproteins by the formation of phosphoric acid and xanthine bases. These xanthine bases differ from those that are formed as the result of the action of boiling acids on thymic nucleic acids. This proteolytic enzyme differs from trypsin in that it is most active in acid liquids and is quickly destroyed in the presence of alkalis at body temperature or by boiling.

In the light of this thorough study by Walter Jones and after referring to the authorities in embryology and a careful histologic study of the bovine thymus (Hanson, A. M.: The Bovine Thymus, *Minnesota Med.* **13**:17 [Jan.] 1930), I was led to believe that true thymic activity was elaborated by the epithelial thymic cells and not by the lymphoid elements. I believe that I have developed a unique method of extraction of the thymus, and the product thus obtained seems to possess the interesting property of resolving certain types of malignancy.

Various methods of extraction were tried, but the one that offers the greatest simplicity in preparation is as follows:

**The fresh neck-thymus glands of calves, ranging in age from 2 to 6 weeks, are carefully freed from portions of tracheal cartilaginous rings, any adhering lymphatic glands and extracapsular connective tissue. The glands are then ground into a thick paste and 600 Gm. of this gland material is transferred to a 4-liter pyrex glass beaker. Over this the following solution in the stated amount is poured:**

| | |
|---|---|
| **Hydrochloric acid, C. P., Conc.** | **5 cc.** |
| **Pure distilled water** | **995 cc.** |

**This is immediately thoroughly stirred by a glass rod so as to mix evenly and prevent the gland material from adhering to the bottom and the sides of the beaker. A milky emulsion results. The beaker is then placed on an iron screen and tripod and a mechanical stirrer introduced so that the end of the glass stirrer almost touches the bottom of the beaker. A stout glass stirrer with a short side flange at a sufficiently twisted angle to drive the liquid and finely ground gland material in an upward direction away from the bottom of the beaker and also to facilitate the removal of adhering fibrous tissue is used. This is revolved at high speed and a flame placed beneath the iron screen and beaker. It is necessary to remove the flame and to turn off and raise the stirrer from time to time in order to remove the fibrous tissue, representing the capsule and the interlobular connective tissue of the gland, which adheres to and fouls the stirrer during the early stage of the extraction. This fibrous tissue is placed in a clean receptacle, the stirrer reintroduced as before and started in operation, and the flame reapplied to the bottom of the beaker. This is repeated from time to time until all fibrous tissue which adheres to and fouls the stirrer**

has been removed. The liquid draining from the fibrous tissue that has been removed is added to the extracting beaker together with such remaining liquid as can be expressed between two heavy pyrex glass plates.

The flame is controlled so that the heating of the liquid extract takes at least one hour and thirty minutes to bring the temperature of the liquid (temperature reading taken near the bottom of the beaker) to 94 C. At or near 92 C., digestion is complete as evidenced by separation from the liquid of coagulated masses. The temperature of the liquid should not be allowed to go above 96 C., when the flame is removed and the stirring continued until the temperature drops to 80 C. or for the space of one-half hour so that the process of digestion with heat has continued for two hours, when the stirrer is turned off and raised and the extract filtered. It filters readily, giving a clear greenish-yellow solution. If the temperature is not raised above 90 C. grade it is impossible to secure a clear filtrate, even on repeated filtrations.

The extract is made up to 990 cc. by the addition of a sufficient amount of additional filtrate, which has been secured by pouring hot distilled water (temperature 96 C.) over the residue on the filter. The extract is then poured into a sterile pyrex glass beaker, a sterile glass stirrer introduced and started, and a flame placed beneath the beaker. This is gradually heated to from 94 to 96 C., but the flame turned off immediately as the temperature near the bottom of the beaker approaches 96 C. Near the end of the heating period, 10 cc. of 3 per cent menthol in 95 per cent pure ethyl alcohol is gradually added. After being heated to 94 C. the extract is transferred to autoclaved glass vials under strictly aseptic conditions. In addition to this, some suitable preservative is added.

I believe that this active extract of the thymus is elaborated by the thymic epithelial cells and not by the lymphoid cells because nucleohistone and related bodies have been largely excluded. Bang has shown that watery and mildly alkaline extracts of lymph glands and thymus are rich in nucleohistone. The proteolytic enzyme peculiar to the thymus gland may possibly play a part in preparing my extract since the reaction mixture is kept at a temperature of from 40 to 70 C. for a considerable time while the fibrous material is being removed. This extract is a colloid and contains about 2 per cent of soluble protein. The colloid may be separated from the solution by an electrolytic method by employing a glass U-tube and platinum electrodes. The colloidal portion collects as a thick colloid gel at the positive pole.

On the addition of a small amount of salts possessing a mild alkaline reaction, the process, by the electrolytic method in separating the colloid from the solution, is reversed in that the thick colloidal gel collects at the negative pole, though its consistency is less compact than that of the gel that collects at the positive pole in mildly acid solution. This may offer a means of concentrating the activity still further and purifying the extract.

This extract, when injected intramuscularly in man, does not give rise to any systemic or local reaction, even when the injections are renewed after an interval of two or three weeks. As it has a low protein content and is nontoxic and sterile, when prepared carefully as described, it is a perfectly safe product to administer to man.

By this method of extraction the following amounts of the original fresh gland have been excluded: capsular and interlobular connective tissue, 14.3 per cent; cellular débris, including nucleohistone or related substances, 61.0 per cent. Of the original fresh gland, 24.7 per cent by weight is taken up by the extract. An extract prepared in this manner contains the following percentages: total solids, 2.5; nitrogen, 0.335, which corresponds to a protein content of 2.09 (assay of a tannic acid precipitate shows that only a fraction of this is actually present as protein) and has a $p_H$ of about 5.0.

This extract is not lethal in doses of from 0.5 to 1 cc. when injected intraperitoneally in white mice and is nontoxic in 1 cc. doses when injected intravenously in dogs of an average weight of 10 Kg., as evidenced by its effect on the blood pressure and the cardiac action.

This extract has been used to some extent, and interesting histologic changes have been found in malignant growths after its employment.

The effects of this extract have been recently reported (Hanson, A. M.: A Report of Four Cases of Inoperable Carcinoma Treated by Intramuscular Injections of Karkinolysin, *Minnesota Med.* **13**:65 [Feb.] 1930. The second patient reported in this series was living and in good health, January 10). Briefly, the mitotic figures almost entirely disappear and the malignant cells show evidence of resolution, areas of cellular elements being simply empty spaces or replaced by a myxomatous-like tissue in places.

The tumors that have been observed in cases treated by intramuscular injections of this extract show a tendency to soften first at the periphery or near the surface. Microscopic studies indicate that changes in the malignant cells are the most marked near the periphery, where the blood supply is rich compared with the deeper and more centrally located areas. Mitosis persists the longer time in these deeper areas, surrounded by poorly staining cells, by open spaces or by a myxomatous-like tissue which has replaced them. The open spaces, if large, contain fluid. These changes suggest an effect from the extract through the blood or lymphatic system, as it is well known that malignant growths treated by the x-rays have a tendency to break down and show microscopic changes first near the center or interior of the mass where the blood supply is poor or practically absent.

This investigation is still in the early experimental stage, and further proofs of its action and possible value in the treatment of malignant conditions are now being sought on a large scale.

ADOLPH M. HANSON, M.D., Faribault, Minn.

## BICHLORIDOL

*To the Editor:*—Your investigation of Bichloridol ampules (THE JOURNAL, Dec. 21, 1929, p. 1971) has just been confirmed by our investigation showing that the Bichloridol container in time reduces the amount of the available mercuric chloride. The Collapsule Company, therefore, will promptly withdraw this product from the market until such time as this condition can be remedied. We would appreciate it if you would publish this note.

DUKE LABORATORIES, INC., New York.

## RECOMMENDATIONS OF THE ALLERGY RESEARCH COUNCIL OF THE ASSOCIATION FOR THE STUDY OF ALLERGY

*To the Editor:*—The following report from the Research Council is endorsed for publication by the Executive Council of the Association for the Study of Allergy.

RAY M. BALYEAT, M.D., Oklahoma City.
HARRY S. BERNTON, M.D., Washington, D. C.
WILLIAM W. DUKE, M.D., Kansas City, Mo.
RICHARD A. KERN, M.D., Philadelphia.
ALBERT H. ROWE, M.D., San Francisco.
GEORGE PINESS, M.D., Los Angeles, Chairman.
WARREN T. VAUGHAN, M.D., Richmond, Va., Secretary.

Antiallergic therapy is a carefully thought out and conscientious attempt to apply current immunologic theories to the prevention, alleviation and cure of hereditary and acquired hypersensitiveness and allied clinical conditions.

Statistics show that no immunologic theory of the past three decades has been more than 5 per cent clinically efficient (Manwaring, W. H., and Krueger, A. P.: Laboratory-Endorsed Therapeutic Agents, THE JOURNAL, July 13, 1929, p. 95). The probabilities are that our currently accepted antiallergic hypotheses assay not much more than 5 per cent clinically verifiable truth. The pressing need of clinical allergists, therefore, is not a multiplication of laboratory and clinical trials with logical deductions from currently endorsed immunologic hypotheses but fundamental biochemical, physiologic and anatomic studies, that accepted and suggested immunologic theories may be adequately tested. Proof or disproof of a single basic hypothesis may

suggest new or improved methods of clinical attack or may render obsolete many or all of our currently logical clinical methods.

The practical value of such basic immunologic research is not generally recognized by clinicians, nor is adequate provision for critical theoretical immunology made in any American medical school or research institution.

It is the opinion of the Research Council that the most important service the Association for the Study of Allergy can render clinical medicine is to call attention to the pressing need for such a basic research and to urge existing laboratories and research institutes to devote a larger percentage of their funds, resources and energies to a more fundamental type of immunologic work.

Since no current research institute is manned, equipped or primarily interested in theoretical immunology, the council recommends that the association endeavor to obtain from a single donor or group of donors a five million dollar endowment for a national institute for immunologic research, the proposed institute to be dedicated solely to advancements in basic immunologic knowledge and contributory fields of biochemistry, physiology and experimental pathology.

W. H. MANWARING, M.D., Palo Alto, Calif.
JOSEPH L. MILLER, M.D., Chicago.

# Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

## INSOMNIA AND HYPERTENSION

*To the Editor:*—A man, aged 21, has been troubled with insomnia for months. His blood pressure is 158 systolic and 98 diastolic. His weight is 156 pounds (71 Kg.), his basal metabolic rate + 18. Roentgen examination of the sella turcica is negative. The blood picture is normal. Urine on repeated examinations has shown only increase of total solids. The heart shows slight enlargement to the left. The present condition has existed one year at least. The only complaint is insomnia. The patient has had scarlet fever, chorea, a tonsillectomy and a tuberculous ankle, which healed up. He was born from a marriage between first cousins. He is a diligent law student. What treatment would you suggest to relieve the insomnia and lower the constantly high blood pressure? Please omit name and address. M.D., New York.

ANSWER.—Functional tests of the kidneys might reveal renal insufficiency. This is important from a prognostic point of view. The cardiac enlargement is a work hypertrophy traceable either to the hypertension or to the increased metabolic rate. As the pulse rate is not given, it cannot be stated definitely that a hyperthyroid state exists. Frequent metabolic readings should be taken and, if the rate increases, attention should be paid to hyperthyroidism. The treatment consists of administering compound solution of iodine followed by thyroidectomy or by the cautious use of the roentgen ray. Even though a rise in the rate cannot be demonstrated, a consideration of hyperthyroidism, because of the increased rate, must not be waved aside. The only effect in this patient, with the facts as stated, that a marriage of first cousins might have is that of intensifying his heritage of the vascular defects which are found in older members of his family. Treatment of hypertension consists in advice to the patient to avoid undue physical and mental strain, overeating and wherever possible to obtain rest in the middle of the day. Meats may be taken in moderation, but it is advisable to eliminate meat soups, spices, condiments and immoderate quantities of salt. The meals should be of equal size and not too large. A gain in weight should be discouraged. A full night's rest should always be obtained. The value of medication has not been definitely proved, although Dr. E. J. Stieglitz reports a lowering of blood pressure with 0.6 Gm. of bismuth subnitrate given three times daily. The nitrate breaks up slowly into the nitrite and effects a gradual lowering of blood pressure. Some form of iodine, as potassium or sodium iodide in 0.6 Gm. doses, is recommended highly. The gastro-intestinal disturbances may be avoided by giving the medicine immediately after meals. The development of signs of cardiac decompensation calls for the ordinarily well known methods of treatment of heart failure. In general, more is to be obtained by a well regulated mode of living than by any specific medicinal measures.

## TERMINOLOGY AND ROENTGEN RAYS

*To the Editor:*—In preparing papers for publication I endeavor to make corrections to harmonize with the latest features of spelling and terminology. For my authority I am accustomed to take the latest edition of the most recently published medical dictionary. Therefore, at present I am banking on the latest edition of the American Illustrated Medical Dictionary. I am attempting to revise the loose and careless use of the word x-ray, and in doing so I am following the terminology found in this dictionary. There is one point which seems to me somewhat uncertain and which perhaps you can clarify for me. It appears from the wording in the dictionary that if one uses the noun it appears as roentgen rays without the hyphen. If, however, the word is used as an adjective, as roentgen-ray therapy, the hyphen appears between roentgen and ray. I do not find in the dictionary roentgen ray used in the singular as a noun. Is there supposed to be a distinction as regards the hyphen whether the word is used in the singular or plural? I am sure your experience can clear up my uncertainty in the use of this word and that you can inform me of the proper employment of the hyphen under various circumstances. M.D., Washington.

ANSWER.—When using the terms "the roentgen ray" and "roentgen rays" as nouns, it is customary to omit the hyphen. When using "roentgen-ray" as an adjective, it is customary to use the hyphen. The plural form is not suitable as an adjective. The use of "roentgen-ray" as an adjective is sometimes necessary, but the approved form is "roentgen" without the ray. The usage in such matters is based on the recommendations of the Subcommittee on Nomenclature to the Section on Radiology of the American Medical Association, June 15, 1928, published in THE JOURNAL, Sept. 29, 1928, among which were the following:

As "roentgen therapy" is preferable to "roentgenologic therapy," so we prefer "roentgen diagnosis" to "roentgenologic diagnosis." As "roentgen" is being advised as a prefix, it seems unwise to combine "ray" with it. For example, "roentgen diagnosis" and "roentgen therapy" seem more logical than "roentgen-ray diagnosis" or "roentgen-ray therapy."

The use of the word "x-ray" should, in a broad sense, be limited to its application to physical problems and to apparatus, as the "x-ray tube" and "x-ray apparatus."

The singular form (x-ray) should be used as an adjective, as x-ray tube, and the plural form (x-rays) as a noun to indicate the radiant energy emitted by the x-ray tube. One should never state, for example, that "the x-ray has many practical applications," but, rather, "x-rays have many practical applications."

## DIAGNOSIS AND TREATMENT OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM

*To the Editor:*—I have a patient who had a gastric crisis in July and had been despondent and unable to work for six months. The blood Wassermann reaction was negative, but the spinal fluid was 4+. I have given fifteen intravenous mercurosal, five bismuth and two sulpharsphenamine injections, the latter causing the patient's legs to swell and turn purple for about a week. He is at present in fine physical condition and says that he feels better than he has for years. He has been driving a taxicab now for the past three months and says that he has no difficulty. Is the malaria treatment indicated in this case? What would be the proper routine now? M.D., New York.

ANSWER.—A detailed analysis should be made of the patient's mental condition, the state of the central nervous system should be determined, and more details should be obtained of the spinal fluid, such as the globulin, cell count, and Lange curve. It is not stated whether the single crisis was all that the patient suffered. Only such information could answer the question as to whether malaria treatment is indicated. If there are no physical or serologic evidences of paresis, the treatment should be continued with iodides and mercury or bismuth. In view of the patient's reaction to sulpharsphenamine, neoarsphenamine should be tried.

## IMMUNIZATION TO INFECTIOUS DISEASES AFTER CHICKENPOX

*To the Editor:*—When may I give diphtheria or scarlet fever toxin-antitoxin to a child who has just recovered from a moderate case of chickenpox Would the immunity reactions conflict?

C. A. EISNER, M.D., Pittsburgh.

ANSWER.—There seems to be no reason for delaying the immunization against diphtheria and scarlet fever after recovery from chickenpox.

### CHRONIC VAGINITIS AND ENDOCERVICITIS

*To the Editor:*—Please give me information concerning the best medical treatment for chronic vaginitis and endocervicitis. I have a case of twelve months' standing with profuse discharge; a vaginal leukorrhea is present with the vagina quite injected and with an appearance that it might bleed. In fact, swabbing the vagina with cotton shows some staining with blood. All symptoms are confined to the vaginal canal and endocervical canal; the uterine adnexa are not involved in any way pathologically. Has bismuth paste treatment been of value? Please omit my name.

M.D., Kentucky.

ANSWER.—Chronic vaginitis is occasionally due to erosions implanted on the walls of the vagina; a few treatments with 5 per cent silver nitrate, at weekly intervals, will suffice to effect a cure.

In most cases, chronic vaginitis is caused by chronic inflammation of the cervix; the most important factor in the treatment of cervicitis is the establishment and maintenance of drainage, both gross and microscopic.

The most effective nonoperative measures include careful dilation of the cervical canal, the employment of silver nitrate within the cervix and to the vaginal walls, and the use of astringent solutions to control the discharge. Silver nitrate may be used within the cervix in a solution as strong as 20 per cent, but care must be taken to avoid seepage to the vaginal walls. Silver nitrate applied to the vagina should not be stronger than a 5 per cent solution.

An excellent mixture for control of the annoying discharge is a 3 per cent solution of tannic acid in glycerin, which is instilled nightly into the upper vaginal canal; 2 or 3 cc. of this solution is usually sufficient.

Bismuth paste has not been particularly useful in the treatment of leukorrhea.

### DEPILATORY FOR RATS

*To the Editor:*—Could you kindly inform me as to what to use as a depilatory for rats for pathologic work? Kindly omit name.

M.D., Pennsylvania.

ANSWER.—Inquiries have not brought to light any depilatory especially suited for use on rats. Purely mechanical means appear to be used generally for removing hair from animals for laboratory purposes. The hair clipper may prove useful in the case of rats, but number 00 must be employed because the hair "just goes through" larger sizes.

### EFFECTS OF PARADICHLORBENZENE

*To the Editor:*—What is the physiologic effect of prolonged exposure to high and low concentrations of the vapor from paradichlorbenzene?

IRWIN STONE, New York.

ANSWER.—It is not known that systematic investigative work has been directed to the toxicity of paradichlorbenzene. In the manufacture of monochlorbenzene, for which there is a large and constant demand, paradichlorbenzene is a necessary by-product. This substance, for which there is only limited demand, has found its greatest use outlet as a disinfestant for moths. It is a white, crystalline solid and is used much like naphthalene. No toxic effects are known to have arisen from its use.

In general, a greater toxicity for isomers is found in the para- rather than the ortho- or meta- position. Chlorobenzene is much less toxic than the mother substance, benzene, although cases have arisen. Rambousek has recorded several cases in which the skin was a gray bluish, and pallor of the mucous membranes, chocolate-colored blood and unconsciousness were present.

Chlorobenzenes are fairly closely related to known toxic substances; on the other hand, as paradichlorbenzene is a solid, with a high melting point, widespread intoxication is unlikely.

### REMOVAL OF GUN POWDER STAINS FROM THE SKIN

*To the Editor:*—Will you kindly give me whatever information and advice you have regarding the removal of bluish discolorations from the skin, due to powder burns from a gun shot? The patient has a mottled appearance of his nose and face due to a powder explosion about seven or eight years ago. Anything you may advise me for the removal of these spots will be greatly appreciated.

M.D., Washington, D. C.

ANSWER.—Soon after the injury it may be possible to pick out some of the carbon particles with a fine knife or a needle. Later, excision of the stain with a knife or a cutaneous punch is practical for small discrete points. Larger areas may be treated by the Variot method for removal of tattoo marks (Shie, M. D.: A Study of Tattooing and Methods of Its Removal, THE JOURNAL, Jan. 14, 1928, p. 94).

### ALBUMIN REACTION IN URINE DUE TO PUS

*To the Editor:*—A patient's urine contains a large amount of pus but no red blood corpuscles or casts, and the blood pressure is not increased. A filtered specimen shows a heavy trace of albumin (heat and acetic acid test). Can the positive albumin test be due to the presence of the pus apart from any kidney involvement?

W. C. KUEHNER, M.D., Kitchener, Ont.

ANSWER.—The albuminuria is probably due to the presence of pus. Urine containing pus practically always gives some reaction for albumin with the heat and acetic acid test, the condition being known as false or accidental albuminuria. It is not necessary that a renal involvement be present, as the pus may come from cystitis, prostatitis or urethritis; but the possibility of kidney disease should, of course, be considered, although it is improbable that such is present in the case described.

### CAUSYTH

*To the Editor:*—I am in receipt of some advertising matter having to do with a product called "Causyth." This was recently given to me by a patient, who, in turn, had received it from some of his Christian science friends, who stated that several of them had obtained spectacular "cures" of severe arthritis by the use of this preparation. I know nothing of this drug but have a feeling that it is just another product which has more or less sales value and possibly results in some symptomatic relief, as do coal-tar products. Will you give me any information you may have concerning this drug? Is there any basis, whether theoretical or controlled experimental, for the claims made for "Causyth?"

M. B. JARMAN, M.D., Hot Springs, Va.

ANSWER.—A number of German journals have contained more or less laudatory reports regarding Causyth, but these are not considered to present acceptable evidence for the value of the preparation. According to the advertising, Causyth is a "cyclohexatrienpyridinsulphonacid, derived from Pyrazol, the formula being $C_{22}H_{24}N_4O_5S$."

The product has not been considered by the Council on Pharmacy and Chemistry nor has the Mallinckrodt Chemical Works, which exploits it by way of its Canadian branch "Mallinckrodt Chemical Works Limited of Canada," requested the Council to report on it. Apparently no reports have been published in American medical journals which are confirmatory of the German propaganda.

A pharmacologist who has given much attention to the action of salicylates and other drugs used in the treatment of rheumatism reviewed seven of the eight papers which were referred to in an advertising circular. He held the evidence to be unsatisfactory and uncritical and concluded: There is nothing in the clinical reports to justify the extravagant claims of the advertising literature sent out by the manufacturer. The drug may act as an analgesic and antipyretic, if enough is absorbed, but convincing evidence of this is lacking. It is also possible that the drug may irritate enough to cause unpleasant symptoms and systemic reactions and aggravate the disease, and, if so, it is potentially dangerous. Short of provoking a reaction, it appears to be therapeutically ineffective and worthless.

### TREATMENT OF PHLEBITIS

*To the Editor:*—What would be the best treatment for chronic phlebitis in both lower legs in a woman, aged 38? The condition appeared recently following influenza. A bilateral acute phlebitis developed 8 years ago after childbirth. When the patient is up, her legs swell and there is pain (stinging, burning pain), with local redness and tenderness. Physical examination is otherwise negative; also the urine, blood Wassermann and Kahn tests are negative. The roentgen examination is negative. There are no visible or palpable varices. The present treatment includes bed rest, elevation, heat by electric hot pad and massage. Please use initials only.

M.D., California.

ANSWER.—The treatment as outlined in the inquiry seems entirely adequate. The edema due to bilateral deep phlebitis is highly resistant to treatment. It also flares up at intervals following infectious disease and therefore it is wise to eliminate all possible foci of infection. If, after proper elevation, which means almost vertical suspension on a Balkan frame, the edema does not subside and if the patient continues to suffer from recurrent attacks of phlebitis, a modified Kondoleon operation might be considered. This consists of a wide excision of large pieces of fascia together with the adjacent indurated fat and connective tissue, thereby producing new connections between veins and lymphatics of superficial tissues and the ones below the fascia. This improvement of drainage has shown fair results but must be undertaken in stages and may occasionally be unsuccessful. In such cases it must be assumed that definite physicochemical changes have taken place in the subcutaneous tissues and are irreversible, especially when the edema has persisted so long.

# Medical Education, Registration and Hospital Service

## COMING EXAMINATIONS

ALASKA: Juneau, March 4, 1930. Sec., Dr. Harry C. DeVighne, Juneau, Alaska.

ARIZONA: Phoenix, April 1-2, 1930. Sec., Dr. H. P. Mills, 14 N. Central Ave., Phoenix, Ariz.

CONNECTICUT: Hartford, March 11-12, 1930. Sec., Dr. T. P. Murdock, 79 Elm St., Hartford, Conn.

MAINE: Portland, March 11-12, 1930. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland, Me.

MASSACHUSETTS: Boston, March 11-13, 1930. Sec., Dr. Frank M. Vaughan, 144 State House, Boston, Mass.

MINNESOTA: Minneapolis, April 1-2, 1930. Basic Science. Sec., E. T. Bell, 110 Anatomy Bldg., University of Minnesota, Minneapolis.

MONTANA: Helena, April 1, 1930. Sec., Dr. S. A. Cooney, Power Block, Helena, Mont.

NEW HAMPSHIRE: Concord, March 13-14, 1930. Sec., Dr. Charles Duncan, Concord, N. H.

NEW MEXICO: Santa Fe, April 14-15, 1930. Sec., Dr. W. T. Joyner, Roswell, N. M.

OKLAHOMA: Oklahoma City, March 11-12, 1930. Sec., Dr. J. M. Byrum, Shawnee, Okla.

PORTO RICO: San Juan, March 4, 1930. Sec., Dr. Diego A. Biascoechea, 3 Allen St., San Juan, P. R.

RHODE ISLAND: Providence, April 3-4, 1930. Dir., L. A. Round, Ph.D., 319 State Office Bldg., Providence, R. I.

WISCONSIN: Madison, March 22, 1930. BASIC SCIENCE. Sec., Prof. R. N. Bauer, 3410 Wisconsin Ave., Milwaukee, Wis.

WISCONSIN: Milwaukee, April 8, 1930. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse, Wis.

## District of Columbia Reciprocity Report

Dr. W. C. Fowler, secretary of the Commission on Licensure of the District of Columbia, reports 12 physicians licensed by reciprocity with other states at a meeting held Oct. 4, and one Oct. 21, 1929. The following colleges were represented:

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Stanford University School of Medicine | | (1921) | California |
| Howard University School of Medicine | | (1925) | N. Carolina |
| University of Louisville School of Medicine | | (1926) | Kentucky |
| Baltimore University School of Medicine | | (1899) | Maryland |
| University of Maryland School of Medicine | | (1903), (1927) (1921) | Maryland Virginia |
| Boston University School of Medicine | | (1915) | New Hamp. |
| Hahnemann Med. College and Hosp. of Philadelphia | | (1912) | Penna. |
| Medical College of Virginia | | (1925) | Virginia |
| University of Virginia Department of Medicine | | (1918) | Virginia |
| Osteopaths | | (1) | New Jersey |

## Maine November Examination

Dr. Adam P. Leighton, Jr., secretary of the Board of Registration in Medicine in the State of Maine, reports the written examination held at Portland, Nov. 12-13, 1929. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Fourteen candidates were examined, 13 of whom passed and 1 failed. Two physicians were licensed through reciprocity with other states and 1 by the endorsement of credentials. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| Yale University School of Medicine | | (1922) | 80 |
| Rush Medical College | | (1929) | 89 |
| Boston University School of Medicine | | (1929) | 81 |
| Harvard University Medical School | | (1891) 75, (1918) | 80 |
| Tufts College Medical School | | (1928) 83, (1929) 79, 82, 83, 84, | 85 |
| Nongraduate | | | 78 |
| Laval University Faculty of Medicine | | (1922) | 76 |

| College | FAILED | Year Grad. | Per Cent |
|---|---|---|---|
| Boston University School of Medicine | | (1923) | 63 |

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| University of Illinois College of Medicine | | (1928) | Illinois |
| Tufts College Medical School | | (1928) | Ohio |

| College | ENDORSEMENT OF CREDENTIALS | Year Grad. | Endorsement of |
|---|---|---|---|
| Harvard University Medical School | | (1927) | N. B. M. Ex. |

## Nevada November Examination

Dr. Edward E. Hamer, secretary of the Board of Medical Examiners of the State of Nevada, reports the written examination held at Carson City, Nov. 4-6, 1929. The examination covered 11 subjects and included 100 questions. An average of 75 per cent was required to pass. Two candidates were examined, 1 of whom passed and 1 failed. Six physicians were licensed through reciprocity with other states. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| Indiana University School of Medicine | | (1918) | 89.4 |

| College | FAILED | Year Grad. | Per Cent |
|---|---|---|---|
| Nagaski Medical College | | (1917) | 51.9 |

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| College of Medical Evangelists | | (1914) | Oregon |
| Hahnemann Medical College of Chicago | | (1916) | Oregon |
| Loyola University School of Medicine | | (1929) | California |
| Harvard University Medical School | | (1922) | California |
| University of Oregon Medical School | | (1926) | Washington |
| University of Vermont College of Medicine | | (1927) | Penna. |

## Delaware December Examination

Dr. Harold Springer, secretary of the Medical Council of Delaware, reports the oral and written examination held at Wilmington, Dec. 10-12, 1929. The examination covered 10 subjects and included 100 questions. An average of 70 per cent was required to pass. Two candidates were examined and passed. Two physicians were licensed through reciprocity with other states. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| Hahnemann Med. College and Hosp. of Philadelphia | | (1928) | 83.4 |
| University of Pennsylvania School of Medicine | | (1928) | 84.4 |

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Hahnemann Med. College and Hospital of Philadelphia | | (1926) | Penna. |
| Jefferson Medical College | | (1927) | Penna. |

## Vermont Endorsement of Credentials

Dr. W. Scott Nay, secretary of the State Board of Medical Registration of Vermont, reports 5 physicians licensed by the endorsement of credentials from June through December, 1929. The following colleges were represented:

| College | ENDORSEMENT OF CREDENTIALS | Year Grad. | Endorsement of |
|---|---|---|---|
| College of Medical Evangelists | | (1928) | N. B. M. Ex. |
| Johns Hopkins University Medical School | | (1918) | New York |
| University of Vermont College of Medicine | | (1928-2) | N. B. M. Ex. |
| Dalhousie University Faculty of Medicine | | (1912) | Nova Scotia |

## Alabama Reciprocity Report

Dr. Stuart Graves, secretary of the Board of Medical Examiners of the State of Alabama, reports 7 physicians licensed by reciprocity with other states from July through December, 1929. The following colleges were represented:

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| University of Arkansas School of Medicine | | (1928) | Arkansas |
| Tulane Univ. of Louisiana School of Med. | | (1927-2), (1928) | Louisiana |
| Johns Hopkins University School of Medicine | | (1923) | Maryland |
| University of Tennessee College of Medicine | | (1927), (1928) | Tennessee |

## Wisconsin September Reciprocity Report

Dr. Robert E. Flynn, secretary of the Board of Medical Examiners of the State of Wisconsin, reports that 12 physicians were licensed by reciprocity with other states at the meeting held in Madison, Sept. 11, 1929. The following colleges were represented:

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Loyola University School of Medicine | | (1929) | Illinois |
| Northwestern University Medical School | | (1929) | Washington |
| University of Illinois College of Medicine | | (1928) | Illinois |
| State University of Iowa College of Medicine | | (1928) | Iowa |
| Boston University School of Medicine | | (1924) | New Hamp. |
| University of Michigan Medical School | | (1920) | Michigan |
| University of Minnesota Med. Sch. | | (1927-2), (1928), (1929-2) | Minnesota |
| Cornell University Medical College | | (1925) | New York |

# Book Notices

ON PRESCRIBING PHYSICAL TREATMENT. By Matthew B. Ray, D.S.O., M.D., Physician to the St. Marylebone General Dispensary. Cloth. Price, $3.75 net. Pp. 179, with illustrations. New York: William Wood & Company 1929.

Of the eight chapters in this book, four are devoted to a description of the anatomy of the skin, its physiology, the effect of treatment and an exposition of the various forms of hydrotherapy. Electrotherapy is limited to three chapters, and includes a discussion of galvanism and its various modifications and technics; faradism, and the now discarded Bergonié treatment for obesity; the sinusoidal current and electric water baths; static electricity, and the various forms of high frequency currents. The last chapter discusses the entire range of natural and artificial ultraviolet radiation. To include all the measures utilized in physical therapy, the sketchy, outline style was adopted. This method has its virtues as well as its drawbacks. The voluminous material is presented in a dogmatic fashion. And in the absence of that rounded detail which appeals to all critical students, the bare data will have little weight on the already established opinion of the reader. The credulous and the less critically minded will no doubt find the information interesting, appealing and acceptable. The choice of style is therefore unfortunate, because the author has made a really good selection of material and has incorporated within the confines of these pages most of the established facts on the subject. Certainly, there is no redundance or repetition. Indeed, the subject matter has been so thoroughly stripped of padding that it is suggestive of sharp corners or angulations. The book also shows a definite lack of balance in another direction. In the light of the decadent status of hydrotherapy, to devote practically four out of eight chapters to an exposition of this subject clearly indicates poor balance. If, however, the space given to it is an index of its worth, the other subjects should have had at least as liberal exposition.

LEHRBUCH DES STOFFWECHSELS UND DER STOFFWECHSELKRANKHEITEN. Von Dr. Med. et Phil. S. J. Thannhauser o. ö. Professor der Medizin, Direktor der medizinischen Klinik der medizinischen Akademie Düsseldorf. Paper. Price, 56.80 marks. Pp. 741, with 94 illustrations. Munich: J. F. Bergmann, 1929.

In this book, based on his lectures, the author endeavors to ground his exposition of the metabolic diseases on a firm physiologic foundation. Experimental work is fully discussed and copious references, not all confined to the European literature, are given. The section on carbohydrate metabolism and diabetes is particularly extensive. There is a short but excellent chapter on water balance and edema. The vitamins and avitaminoses are dealt with rather sketchily.

DAS SCHIZOPHRENE DENKEN: Phänomenologische Studien zum Problem der widersinnigen Sätze. Von Dr. Jakób Frostig. Paper. Price, 4 marks. Pp. 87. Leipzig: Georg Thieme, 1929.

The first part of this book is a philosophic argument in favor of the view that normal thought processes follow definite rules and that concepts of the normal individual are common to all normal persons. This common basis for thought is designated by the author as collective, and the common concepts as collective structures. He believes that the ideas expressed by the schizophrenic patient occur because of an inability to actualize the collective structures and the consciousness belonging to these structures. He states that his theory does not attempt to explain the cause of this inability in the schizophrenic patient, but that the explanation must be approached from a physiologic basis which is not as yet practicable.

CLINICAL OBSTETRICS. By Paul T. Harper, Ph.B., M.D., Sc.D., Clinical Professor of Obstetrics, Albany Medical College. Cloth. Price, $8 net. Pp. 629, with 250 illustrations. Philadelphia: F. A. Davis Company, 1930.

This is based on the author's experience, which evidently has been extensive. Only a few references are cited, because the author presumes that "the reader has acquired a foundation in fundamentals from textbook study and that his knowledge has been broadened by familiarity with the works of reference and with current literature." The material is well presented and the numerous illustrations, which contain an abundance of diagrammatic sketches, legends and charts, are most instructive. The teachings expressed are not dogmatic, as indicated by such expressions as "There is no single way to induce labor" and "There is no 'best' forceps." Exception might be taken to the statement that low cervical cesarean section is unsuited for full term breech presentations and placenta praevia; hundreds of cervical operations have been performed for both of these conditions with excellent results. The conservative treatment of the toxemias of pregnancy is favored, but the author advocates the use of veratrum viride, which is a dangerous drug and has been discarded by the vast majority of obstetricians. However, most of the views presented are the ones generally accepted by authorities on obstetrics. The book should prove to be especially useful to general practitioners.

DAS DENKEN UND SEINE KRANKHAFTEN STÖRUNGEN. Von Dr. med. Eilhard von Domarus. Würzburger Abhandlungen. Band V, Heft 8. Von Dr. Joh. Müller. Paper. Price, 5 marks. Pp. 369-456. Leipzig: Curt Kabitzsch, 1929.

This is an analytic description of the development of the thought processes from primitive to civilized man. The mental activities of the schizophrenic patient and the primitive man are compared and the conclusion is reached that an intensive study of the latter may lead to an understanding of the schizoid thought. The author believes that such a study would yield clues for the investigation of schizophrenia, whether or not the disease is considered as a regression to primitive conditions.

A TEXTBOOK OF PHYSIOLOGY FOR NURSES. By William Gay Christian, M.D., Professor of Anatomy, Medical College of Virginia, and Charles C. Haskell, B.A., M.D., Professor of Physiology and Pharmacology, Medical College of Virginia. Second edition. Cloth. Price, $2. Pp. 153, with 34 illustrations. St. Louis: C. V. Mosby Company, 1929.

This is a well written but elementary book intended for nurses. With some assistance from instructors, nurses with a high school education ought to be able to handle the material. However, it will be essentially book knowledge, since no laboratory work or demonstrations are indicated. For nurses who enter a training school with two or more years of college work, a more comprehensive textbook of physiology is indicated.

THE INTERNAL SECRETIONS OF THE OVARY. By A. S. Parkes, M.A., Ph.D., D.Sc. Cloth. Price, $7.50. Pp. 242, with 69 illustrations. New York: Longmans, Green & Company, 1929.

The physiology of the ovaries and related organs is at present an active, growing point in biology and medicine, not only from the point of view of general interest but also from the point of view of factual progress. The present monograph by one of the noteworthy experimental workers in the field is therefore exceedingly welcome, as the monograph is a reliable and objective review of most of the literature to date. Among the numerous chapters on the various aspects of ovarian secretions is one on the relation of the anterior pituitary body to ovarian function. Strangely enough, there is little or nothing on the thyroid to ovarian function. The author suggests the name of "oestrin" for the ovarian hormone that initiates or controls the estrual cycle. The book will take a significant place in standard scientific works in the endocrine field and is equally useful and valuable to laboratory workers and practicing physicians.

THE UKRAINA PSYCHONEUROLOGICAL INSTITUTE FOR FIVE YEARS (1921-1926). Under the Director of Institute, Prof. A. J. Heymanovich. Paper. Pp. 55. Kharkov, 1929.

The Ukrainian (south Russian) psychoneurologic institute is a product of the Russian revolution. It was founded by its director, Prof. A. J. Heymanovich, eight years ago for the purpose of fostering the science of psychoneurology, which in the south of Russia was not as flourishing as in the north. The work of the institute is being devoted not only to the study of psychoneurology and neurobiology but also to that of the fields pertaining to the study and training of personality. The scientific work is divided among a number of departments which are formed into groups, such as those for morphology studies, for biologic experiments, for social psychoneurology and for treatment. Some departments are highly specialized, being devoted, for instance, to special studies of conditioned reflexes (conducted by Professor Volborth, a pupil of Pavlov), or electrophysiology (Professor Danilevsky). Every field of neuro-

psychiatry, psychophysiology, neurology, neurosurgery and allied sciences (anatomy, physiology, pathology and anthropology) is thoroughly studied. A department of experimental pedology, for instance, is busy with the study of the social, sexual, school and other influences on the character and mentality of modern childhood and with the study of methods of investigation of mentally defective children. In the "laboratory of labor" the condition of radio workers and of aviators is thoroughly studied, and among other topics the influence of some gases on the work of the heart and the vascular reaction. The work is carried on by the regular staffs of the departments as well as by volunteer workers or guests, of whom sixty have been so far engaged in the institute's extensive research work. In the first five years (up to February, 1927) 113 scientific meetings were held and 300 papers were read and published in the scientific periodicals of the soviet republics and abroad. They are enumerated in the last thirteen pages of the pamphlet. The institute publishes its own transactions, of which so far fourteen volumes have been published. The last four volumes of the transactions have been devoted to physiology of work, experimental psychoneurology, morphology of the nervous system and the anthropology of the "aspiring scholars of Ukraina." The institute is situated in Kharkov (Harkov), the capital of Ukraine, and is in close association with other great institutions of the soviet land (Pavlov's, Bechterew's, Kornilov's) as well as with the academy of the sciences and the neurologic institutes of Europe. It has a library of 6,000 volumes and receives 150 scientific periodicals. The budget amounts now to 70,000 rubles (about $35,000) and with the salaries to 130,000 rubles (about $65,000). This compares favorably with the condition of the institute during its first two years of existence, when the sole moral and financial support was the Norwegian scientist and explorer Dr. Fridtjof Nansen. This short review may convey some conception of the feverish scientific activity that is going on in postrevolutionary Russia. There is hardly a zeitschrift or a similar publication in other languages that does not contain articles by Russian investigators, for the Ukrainian psychoneurologic institute is but one of a number of similar institutions, universities and other scientific centers now abundant in the Russian soviet republics. It must be conceded that some of the work done in the fundamental sciences (anatomy, physiology, pathology) is matchless—incomparably superior to anything produced elsewhere. The booklet is printed in tolerable English and on excellent paper.

BACTERIOLOGY, ESPECIALLY DETERMINATIVE BACTERIOLOGY. By Prof. Dr. K. B. Lehmann, and Prof. Dr. R. O. Neumann. Volume Ia: Parts A. B. Technique and General Determinative Bacteriology. Translated by Dr. Robert S. Breed, Chief in Research, New York Agricultural Experiment Station, Geneva, New York, Seventh edition revised under the supervision of K. B. Lehmann. Cloth. Price, $1.50. Pp. 103, with plates. New York: G. E. Stechert & Company, 1930.

This is a translation of the German edition. It deals largely with the preparation of specimens for microscopic examination and with mediums used for the growth of bacteria. The value of the manual to American workers is less than it would have been if the authors had seen fit to include some procedures in rather general use in this country. The special sections, such as those relating to examinations of water, air and soil and to immunologic reactions, are apparently introduced in the line of suggestions, since no detailed methods are given. The colored plates accompanying the section on general diagnosis are striking and satisfactory.

DIE SEPTISCHEN ERKRANKUNGEN IN DER INNEREN MEDIZIN. Von Dr. Ferdinand Donath, Assistent der „Herzstation" in Wien, und Prof. Dr. Paul Saxl, Assistent der I. med. Univ. Klinik in Wien. Paper. Price, 12.60 marks. Pp. 205. Vienna: Julius Springer, 1929.

This is an excellent review of the present status of our knowledge of the septic infections in internal medicine. It is intended for those making a special study of the laboratory phases of these diseases but it is also of interest to the general practitioner. The book gives a combined picture of the etiology, pathology and clinical aspects of the treatment of septic infections. The chapter on blood cultures is complete and the interpretation of the cultures derived is well stated. The authors believe that *Streptococcus hemolyticus* and *Streptococcus viridans* may be changed to each other under suitable conditions. The defense mechanism of the human body is well presented. The various clinical pictures of sepsis are given in full detail and the chapter on agranulocytosis is excellent. There is nothing new suggested for treatment. The outlook is still quite hopeless.

AN OUTLINE OF NEUROLOGY AND ITS OUTLOOK. By Sir E. Farquhar Buzzard, K.C.V.O., M.A., M.D., Regius Professor of Medicine, Oxford University. Being the Eleventh Earl Grey Memorial Lecture, Delivered at King's Hall Armstrong College Newcastle-on-Tyne, March 11, 1929. Paper. Price, 35 cents. Pp. 24. New York: Oxford University Press, 1929.

This is a scholarly historical survey of the progress of neurology from the earliest times, written for the public. It presents a plea for wider dissemination of the knowledge that nervous and mental disorders are both related to physical disturbances of the body which are open to investigation and treatment by scientific methods. "Until all men and women reach adult life equipped with some sound, though elementary, knowledge of the structure and functions of their own bodies and minds, until they are endowed with some sense of responsibility to themselves and to their progeny, little practical use can be made of the rich harvest of scientific facts and laws which is now being reaped."

DORNBLÜTH ARZNEIMITTEL DER HEUTIGEN MEDIZIN MIT THERAPEUTISCHEN NOTIZEN ZUSAMMENGESTELLT FÜR PRAKTISCHE ÄRZTE UND STUDIERENDE DER MEDIZIN. Bearbeitet von Prof. Dr. med. C. Bachem. Fifteenth edition. Cloth. Price, 15.60 marks. Pp. 528. Leipzig: Curt Kabitzsch, 1930.

A book that has enjoyed fifteen editions within fifty-eight years deserves respectful consideration. That a new edition was required since the last one, dated 1923, is evident, for "never has the manufacturing of medicinal products made such tremendous advances as since the publication of the last edition." The author regrets that nearly all good prescription combinations are nowadays put up in the form of proprietary medicines, and that "unfortunately not only the small concerns are prominent in this direction." This has increased the number of preparations on the market to an almost infinite degree. In spite of careful selection, almost 400 new items had to be added; and quite as many more or less obsolete articles were deleted. The material admitted is handled with the customary German thoroughness. In all these closely printed pages, one would find few superfluous words. To the German physician this book should be an almost indispensable office desk companion. To the American physician who reads the current German medical journals, it is a godsend in helping him to understand the numerous references to German proprietaries with which the literature is so freely sprinkled.

SONDERBÄNDE ZUR STRAHLENTHERAPIE. Herausgegeben von Professor Dr. Hans Meyer. Band XII: Ueber Röntgenschäden und Schäden durch radioaktive Substanzen. Ihre Symptome, Ursachen, Vermeidung und Behandlung. Von Priv.-Doz. Dr. Wilhelm Flaskamp, Universitätsfrauenklinik Erlangen. Mit einem Geleitwort von Professor Dr. med. et phil. Hermann Wintz, Direktor der Universitätsfrauenklinik und des Röntgeninstitutes Erlangen. Paper. Price, 30 marks. Pp. 265, with 130 illustrations. Berlin: Urban & Schwarzenberg, 1930.

This is a codification of facts dealing with immediate and remote injury from radiotherapy. The author emphasizes the fact that every act of irradiation comprises an intervention into the physiochemical function of the bodily cells analogous to the action of powerful drugs. One must distinguish between the local and the general action of therapeutic rays. In the last instance the whole problem of irradiation, including the avoidance of untoward harm, is a dosimetric proposition. The injuries inflicted are divided into reversible and irreversible ones. In the special part the harmful consequences of irradiation are discussed as appearing in the skin and in the deeper situated organs, and the deleterious influence on the general somatic condition. Dermatitis, ulcerations and roentgen cancer are thoroughly discussed. Instructive histologic expositions of the harm produced are given. The administration of the proper prophylactic measures and their evaluation are presented. Particular attention is paid to the possible deterioration of the fetus. The illustrations are of high quality and helpful in sustaining the author's contentions.

# Medicolegal

### Testimony of Physician Based on Unauthorized Examination Admissible

*(Plater v. W. C. Mullins Construction Co. (Mo.) 17 S. W. (2d) 658)*

The plaintiff, Plater, sued the defendant, the W. C. Mullins Construction Company, because of personal injuries alleged to have been received in an automobile accident due to an obstruction of the highway by the defendant. Counsel for both parties agreed that she should be examined by Dr. Robinson. She consented partly in the hope of effecting a settlement prior to the trial. Counsel for the defendant claimed that, when he spoke to Dr. Robinson about making the examination, Dr. Robinson declined to examine the plaintiff by himself and called in Dr. Horigan. Neither the plaintiff nor her counsel, however, was notified of Dr. Horigan's prospective presence at the examination. When the plaintiff presented herself at Dr. Robinson's office, Dr. Horigan was there, took part in the examination, and talked with Dr. Robinson about the case. The plaintiff did not know whether he was or was not a physician, but she made no objection to anything that he did, because she did not know that she should do so. When the defendant offered Dr. Horigan as a witness, counsel for the plaintiff objected. The trial court sustained the objection. Thereafter a verdict was rendered for the plaintiff, and the defendant appealed to the Kansas City court of appeals, complaining among other things of the exclusion of Dr. Horigan's testimony.

There was no objection to Dr. Horigan's testimony on the ground that the plaintiff submitted to a physical examination in an attempt to procure a settlement. Neither was the objection to it based on any claim that he had acquired his information while attending the plaintiff in a professional capacity to enable him to prescribe for her as a patient. The objection was based on public policy, and in support of the objection the plaintiff cited *Michaels* v. *Harvey* (Mo. App.) 179 S. W. 735, in which the court held that to permit a physician who had been permitted to examine the plaintiff in an attempt to compromise her claim, to disclose the knowledge of her condition obtained in that manner, would violate the rules promulgated to encourage the compromise of disputed claims. The exclusion of this testimony, said the appellate court, was error; it was insufficient that the plaintiff submitted to an examination partly in the hope of effecting a compromise. What the patient hoped was immaterial. The statement of the case showed no objection to Dr. Horigan's testimony on the ground that the examination by him was made in an attempt to procure a settlement.

The voluntary nature of the plaintiff's act permitting an examination was not affected by the fact that she had not previously agreed to submit to it. With or without a previous agreement, the plaintiff voluntarily permitted a third person to take part in an examination calculated to reveal her physical condition. She did not seek to exclude Dr. Horigan. She stated simply that she did not know that he was a physician. In other words, she did not claim that her right of privacy had been unlawfully invaded but simply stood on the proposition that she would not have permitted an invasion of her right of privacy had she known that the witness was competent to give his opinions in evidence. The rule in the state of Missouri and in the United States generally is that courts do not concern themselves with the method by which a party has secured the evidence which he adduces in support of his contention, and evidence which is otherwise admissible will not be excluded because it has been fraudulently, wrongfully or illegally obtained. While this rule is subject to an exception where the evidence has been obtained by search and seizure prohibited by the Constitution, that exception was not involved in the present case. The court of appeals held, therefore, that a plaintiff in a personal injury suit who permits a bystander to assist in an examination of her physical condition runs the risk that that bystander, when called as a witness, will be permitted to state his opinions because of his special skill and training. The judgment of the court below was reversed and the cause remanded.

**Dying Declarations: Proof of Realization of Impending Death Essential to Admissibility.**—It is not necessary that the deceased say that he is not going to live; it is sufficient if the evidence shows that such was his belief. The fact that the physician who was called to attend the deceased did nothing for him because nothing could be done is not material, when it is not shown that the fact that nothing could be done was communicated to the deceased. A statement by the deceased at or about the time of making a dying declaration to the effect that he did not think he could stand it much longer is not evidence of such a mental state as to justify the admission of the dying declaration; almost any person in pain, whether from a mortal wound, or the toothache, or any other imaginable pain might make such a statement. An alleged dying declaration made about five hours before death should not have been admitted without additional proof showing that the deceased knew or believed he was going to die.—*Hale v. State (Texas), 16 S. W. (2d) 1068.*

It is not necessary to the admissibility of a dying declaration that anything be said in words, when the declaration is taken, concerning impending death. The declarant's belief that death is actually impending when he makes the statement may be inferred from the circumstances. If on preliminary inquiry the evidence is sufficient to show that the declarant prima facie realized his impending death, the declaration should be admitted and the jury charged to determine whether he was or was not conscious of that fact.—*Morrow v. State (Ga.), 148 S. E. 500; also Simpson v. State (Ga.), 148 S. E. 511.*

**Practice of Optometry and the Sale of Glasses Distinguished.**—Etzenhouser took orders in Missouri for eye glasses and spectacles, to be supplied by his principal, a Chicago optical company. He made no examination of the eyes of a prospective purchaser, but he supplied him with a device by which the customer might determine for himself the kind of lenses needed. Etzenhouser, on receipt of one dollar as part payment for the eye glasses or spectacles desired, ordered them from Chicago, and when completed they were mailed directly to the purchaser, C. O. D. After conviction of practicing optometry without a certificate of registration, Etzenhouser appealed to the Kansas City court of appeals. He contended that he was not engaged in the practice of optometry within the meaning of the law and moreover that the transaction constituted interstate commerce. It may be true, said the court of appeals, that Etzenhouser himself did not manipulate the device that he furnished to the prospective customer, but he did furnish it and he either explained how to operate it or referred the customer to the printed directions on it. His relation to the prospective customer was not greatly different from that of an oculist who places a chart on the wall opposite a patient and then manipulates lenses in front of the patient's eyes. In either case, the person whose vision is being tested must himself give the ultimate information as to when he gets the best vision. Etzenhouser was prosecuted not for the sale of eye glasses or spectacles but for acts which were done prior to the sale and which therefore were not within the purview of interstate commerce. The judgment of the court below was affirmed.—*State v. Etzenhouser (Mo.), 16 S. W. (2d) 656.*

# Society Proceedings

## COMING MEETINGS

Alabama, Medical Association of the State of, Montgomery, April 15-18. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.

American Association of Pathologists and Bacteriologists, New York, April 17-18. Dr. H. T. Karsner, 2085 Adelbert Road, Cleveland, Sec'y.

American Pharmacological Society, Chicago, March 27-29. Dr. E. D. Brown, University of Minnesota, Minneapolis, Secretary

American Physiological Society, Chicago, March 26-29. Dr. A. C. Redfield, 240 Longwood Avenue, Boston, Secretary.

American Society for Experimental Pathology, Chicago, March 26-29. Dr. Carl V. Weller, University of Michigan, Ann Arbor, Secretary.

American Society of Biological Chemistry, Chicago, March 26-29. Dr. H. B. Lewis, University of Michigan Medical School, Ann Arbor, Sec'y.

Arizona State Medical Association, Phoenix, April 17-19. Dr. D. F. Harbridge, 407 Goodrich Building, Phoenix, Secretary.

Federation of American Societies for Experimental Biology, Chicago, March 26-29. Dr. A. C. Redfield, 240 Longwood Avenue, Boston, Sec'y.

Maryland, Medical and Chirurgical Faculty of, Baltimore, April 22-23. Dr. John T. King, Jr., 1211 Cathedral Street, Baltimore, Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American J. Hygiene, Baltimore

**11:** 1-226 (Jan.) 1930

*Investigations on Ascaris Lumbricoides and Associated Intestinal Helminths of Man in Southwestern Virginia. W. W. Cort, G. F. Otto and L. A. Spindler, Baltimore.—p. 1.
Flagellates from Ruffed Grouse. E. E. Tyzzer, Boston.—p. 56.
Physical Impairments of Adult Life. E. Sydenstricker and R. H. Britten, New York.—p. 73.
Id. E. Sydenstricker and R. H. Britten, New York.—p. 95.
Ancylostomiasis and Ascariasis in Egypt. D. L. Augustine, M. Helmy and M. Nazmi, Cairo, Egypt.—p. 136.
Experiments with Physiologic Strains of Dog Hookworm, Ancylostoma Caninum. J. A. Scott, Baltimore.—p. 149.
Effects of Changes in Diet and Intestinal Conditions of Rats on Infections with Trichomonas Hominis and Pentatrichomonas Ardin Delteili. H. L. Ratcliffe, Baltimore.—p. 159.
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Seasonal Study of Plancton of Spring Fed Chara Pool Versus That of Temporary to Semipermanent Woodland Pool in Relation to Mosquito Breeding. R. Matheson and E. H. Hinman, Ithaca, N. Y.—p. 174.
Bacteriophage in Tissue Cultures. I. Dresel and M. R. Lewis, Baltimore.—p. 189.
Age Distribution of Influenza Deaths, Cleveland, Ohio, 1918-1929. G. W. Moorehouse, Cleveland.—p. 196.
Controlled Flocculation Test in Diagnosis of Syphilis. A. Michailoff, Sofia, Bulgaria.—p. 202.
Value of Measurements in Study of Protozoan Parasite Isospora Lacazie (L'Abbé). D. C. Boughton, Minneapolis.—p. 212.

**Investigations on Ascaris Lumbricoides and Associated Intestinal Helminths of Man in Southwestern Virginia.**—A study of *Ascaris lumbricoides* and other human intestinal worms was made by Cort et al. in Wise County, Virginia, which is located in the mountainous section of the southwestern part of the state. Examinations were made by the dilution egg counting method in more than 2,000 individuals representing a cross section of the poorer elements of the community. These examinations were supplemented by careful environmental studies of individual families and communities and by examination of the soil by an egg isolation method for helminth eggs. The incidence of ascaris in the series examined was found to be almost 60 per cent in the children and 30 per cent in the adults. The worm burden of the children was several times that of adults and the females of childbearing age were more heavily infested than the males. In fact, almost all the really severe cases were found in children under 12 years. It was also found both in the rural areas and in the community groups studied that the family was the unit of ascaris dissemination and that certain families had extremely heavy worm burdens. In the homes of most of the families studied, even the most heavily infested, privies were present, which were in use, especially by the adults. A search for the factors responsible for the ascaris infestation of the region gave no evidence that the water supply was ever responsible. Even where privies were present, gross soil pollution usually attributed to the youngest children was commonly found in the yards of families with ascaris infestation. Such pollution seeded the dooryards, the soil along the sides of the houses and in many cases the areas under the houses with enormous numbers of ascaris eggs. The conclusion was drawn that the introduction of privies had not brought ascaris under control because of the fact that they were not used by the young children. Only a few sources of infestation were found affecting several families or community groups, although there were several cases in which the visits of children to polluted areas in other yards had built up heavy cases in families that had no pollution on their premises. There was no evidence that the general environmental conditions, amount of vegetation or character of the soil influenced ascaris infestation except in those places where unshaded yards were covered with a layer of cinders. Such soil conditions proved to be unfavorable for the development of ascaris eggs and kept down the infestation in certain places where soil pollution was bad. The hookworm incidence in the whole series was only 6.1 per cent and there were only a few cases of any severity.

### American J. Physical Therapy, Chicago

**6:** 434-480 (Jan.) 1930

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Curietherapy of Inoperable Cancers of Rectum by Newmann-Coryn Method. R. Gauducheau, Nantes, France.—p. 450.
Roentgentherapy of Uterine Fibromyomas and Hemorrhagic Metropathies. R. Gilbert, Paris, France.—p. 452.
Therapeutic Uses of Infra-Red Rays. C. Benoist, Paris, France.—p. 459.
Problems Encountered in Rebuilding Health. J. C. Ross, Los Angeles.—p. 461.
Production of Ultraviolet Erythema. M. G. Smith, Chicago.—p. 462.
Roentgen Treatment of Commoner Microbic Diseases of Skin. J. B. Higgins, Manchester, England.—p. 466.

### American J. Tropical Medicine, Baltimore

**10:** 1-81 (Jan.) 1930

Transmission of Experimental Yellow Fever by Mosquitoes Other Than Aedes. C. B. Philip, Lagos, Nigeria.—p. 1.
Dengue Fever Transmitted by Aedes Albo Pictus, Skuse. J. S. Simmons, J. H. St. John and F. H. K. Reynolds, Manila, P. I.—p. 17.
Transmission of Dengue Virus from Infected to Normal Aedes Aegypti. J. H. St. John, J. S. Simmons and F. H. K. Reynolds, Manila, P. I.—p. 23.
Parasites in Blood of Wild Monkeys of Panama. H. C. Clark, Panama.—p. 25.
Poisonous Fishes and Fish Poisonings: Ciguatera in West Indies. E. W. Gudger, New York.—p. 43.
Nodular Fibrosis of Spleen Associated with Filaria Loa. O. Klotz, Toronto, Canada.—p. 57.
Parasitic Cirrhosis of Liver in Cat Infected with Opisthorchis Pseudofelineus and Metorchis Complexus. H. E. Essex and J. L. Bollman, Rochester, Minn.—p. 65.
*Biologic Tests for Hydatid Disease: Comparison of Casoni and Weinberg Tests. R. H. Goodale and H. Krischner, Beirut, Syria.—p. 71.

**Biologic Tests for Hydatid Disease.**—In a series of 106 cows both the intradermal and the complement fixation tests for hydatid disease were done by Goodale and Krischner to compare their relative values. These tests were checked by examination of the organs after slaughtering. Of forty-four cows in which hydatid cysts were found, thirty-eight, or 86.3 per cent, gave a positive skin test, and twenty-six, or 59 per cent, showed a positive complement fixation reaction. There were eleven false positive skin tests and ten false positive complement fixation tests. The rest of the series agreed with the conditions found in the organs. One of the two tests was positive in all of the cows in which hydatid cysts were found.

### Annals of Internal Medicine, Ann Arbor, Mich.

**3:** 651-792 (Jan.) 1930

Significance of Abnormal Metabolic Features in Management of Thyrotoxicosis. W. B. Palmer, New York.—p. 651.
Delayed Type of Allergic Reaction. R. A. Cooke, New York.—p. 658.
*Serum Inorganic Sulphates in Addison's Disease. E. G. Wakefield, Rochester, Minn.—p. 662.
*Phosphorus in Blood and Urine: Excretion and Retention of Phosphorus in Normal Subject and in Patients with Renal Disease. I. Schulz, Rochester, Minn.—p. 667.
Long Interval Versus Short Interval Treatment of Hay-Fever. N. S. Schiff, New York.—p. 690.
*Brittle Bones and Blue Sclerae: Case with Glycosuria. H. Bowcock, Atlanta, Ga., and G. T. Lewis, Emory, Ga.—p. 700.
*Argyll Robertson Pupils in Polyneuritis. J. M. Nielsen and L. E. Verity, Battle Creek, Mich.—p. 707.
Undulant Fever in Man: Case Due to Brucella Abortus. W. R. Vis, Grand Rapids, Mich.—p. 714.
Medicine and the Muse: Oliver Wendell Holmes. L. H. Roddis, Washington, D. C.—p. 717.

**Serum Inorganic Sulphates in Addison's Disease.**—An examination of fifteen patients made by Wakefield showed that concentrations of serum inorganic sulphates were normal in cases of Addison's disease except during the critical periods and the terminal stages of the disease. The increase in the concentration of serum sulphates during these periods is an expression of renal insufficiency.

**Phosphorus in Blood and Urine in Normal Subject and in Patients with Renal Disease.**—Studies were made by Schulz of the levels in the blood and of the urinary excretion of inorganic phosphorus in the normal person and in subjects with nephritis. In a normal, fasting individual the level of inorganic phosphorus in the plasma is equal to or less than the level in the whole blood. In patients with nephritis in whom there is retention of phosphorus, the level of inorganic phosphorus in the plasma is greater than that in the whole blood. Retention of phosphorus associated with retention of creatinine in patients with chronic nephritis offers a fatal prognosis. A mixture of solution of acid sodium phosphate, 9 per cent, and of solution of alkaline sodium phosphate, 9.6 per cent, in a ratio of three parts of the former to seventeen parts of the latter is suitable for intravenous injection into man. It is nontoxic. The intravenous injection of this solution produces an immediate rise followed by a gradual fall in the inorganic phosphorus of the blood; the level of phosphorus in the plasma is greater than the level in the cells; it causes an increase in the amount of inorganic phosphorus excreted in the urine and in the amount of phosphorus excreted in the feces; the amount in the urine is much greater than that in the feces. The carbon dioxide combining power of the plasma, the level of serum calcium, and the amount of calcium excreted in the feces are not appreciably affected by the injection of the solution of phosphate. In the normal, fasting subject 50 per cent of the injected phosphorus is recovered in the urine within four hours. In cases of nephritis, the urinary response is delayed and the amount of phosphorus recovered is decreased as the amount of renal injury is increased. Also, the return of the level of inorganic phosphorus in the blood to that preceding injection is slower in patients with nephritis than in the normal subject. In a normal person more phosphorus is excreted in the urine than in the feces. The ratio of the total amount of phosphorus in the feces to the amount of inorganic phosphorus in the urine is between 1 : 2.5 and 1 : 2.9, inclusive. The path of excretion of phosphorus is not altered by the ingestion of calcium chloride even though the level of inorganic phosphorus in the blood is raised through intravenous injection of solution of phosphate.

**Brittle Bones and Blue Sclerae Associated with Glycosuria.**—A sporadic case of brittle bones and blue sclerae is reported by Bowcock and Lewis. The clinical picture conformed to cases previously described. In addition, an apparently benign glycosuria was present. Serum calcium determinations gave figures at the upper limits of normal, or slightly above. Estimations of urine and stool calcium and phosphorus gave evidence of abnormally high percentages of both in the stool, in such proportions as to suggest the possibility of faulty absorption from the intestinal tract.

**Argyll Robertson Pupils in Polyneuritis.**—A case is reported by Nielsen and Verity in which, during the course of an acute polyneuritis, Argyll Robertson pupils, bilateral optic neuritis and bilateral Bell's palsy developed. The pupils became normal on the ninth day. Evidence is furnished by the unique case to show that Sven Ingvar's ideas of the pathogenesis of reflex pupillary immobility are probably correct.

## Archives of Ophthalmology, Chicago

**3:** 1-132 (Jan.) 1930

Phases and Contributions of American Ophthalmology. G. E. de Schweinitz, Philadelphia.—p. 1.
Portable Adaptometer. G. S. Derby, P. A. Chandler and L. L. Sloan, Boston.—p. 31.
Transverse Sinus and Relation to Choked Disk. G. W. Swift, Seattle. —p. 47.
Bilateral Coloboma of Optic Nerve. F. P. Calhoun, Atlanta, Ga.—p. 71.
Choroideremia. S. Wolf, Chicago.—p. 80.
Pathogenesis of Glaucoma. S. R. Gifford, Chicago.—p. 88.

## Archives of Otolaryngology, Chicago

**11:** 1-136 (Jan.) 1930

Otosclerosis in Histogenic Relations to Osteodystrophia Fibrosa (Ostitis Fibrosa). M. Weber, San Francisco.—p. 1.
Endothelioma of Larynx. R. C. Lynch, New Orleans.—p. 36.
*Effect of Camphor, Eucalyptol and Menthol on Nasal Mucosa. N. Fox, Chicago.—p. 48.
*Dental Caries as Contributing Factor in Maxillary Sinusitis. G. Berry, Worcester, Mass.—p. 55.
Endocrine Features of Interest to Otolaryngologist. T. P. Sprunt, Baltimore.—p. 63.
Deafness and Coincident Variations in Nasal and Aural Pathology. E. P. Fowler, New York.—p. 78.
New Instrument for Control of Tonsillar Hemorrhage. I. I. Alper, New York.—p. 86.
New Apparatus for Roentgenography of Sinuses. H. L. Baum, Denver. —p. 90.
New Operative Treatment for Atrophic Rhinitis with Ozena. I. I. Muskat, Chicago.—p. 94.
Nasal Suturing Instrument. C. A. Campbell, Steubenville, Ohio.—p. 95.
Functional Examination of Hearing; Deafmutism and Education of Deaf. R. Sonnenschein, Chicago.—p. 97.

**Effect of Camphor, Eucalyptol and Menthol on Nasal Mucosa.**—Fox asserts that when menthol is applied to the nasal mucous membrane of a rabbit for nine months in dilutions as low as 1 per cent, it causes some degenerative changes. When applied to the nasal mucosa of a rabbit, menthol in 5 per cent dilutions causes definite destructive changes throughout all layers of the nasal membrane. Five per cent eucalyptol and 5 per cent camphor have some deleterious effect on the nasal mucosa of a rabbit when used daily for nine months. Liquid petrolatum apparently also exerts a deleterious effect on the nasal mucosa of a rabbit when used for nine months.

**Dental Caries as Contributing Factor in Maxillary Sinusitis.**—Berry stresses the importance of recognizing dental caries as a cause of maxillary sinusitis. His study of several hundred cases has led him to believe that in 60 per cent of cases there is an etiologic relationship between these two conditions. He reports four cases. Each patient came because of an infection of the antrum. Each patient supposed the teeth to be all right. In each case the dental transilluminator revealed, just under the floor of the diseased antrum, a tooth which appeared to be infected. In each case, the roentgen ray showed the tooth to be abscessed. In three of the four, an alveolar fistula followed the careful dental extraction. Three of the fistulas were completely healed and the fourth was improving, under little or no other treatment than the dental extractions.

## California & Western Medicine, San Francisco

**32:** 1-72 (Jan.) 1930

*Intestinal Obstruction. V. R. Mason, Los Angeles.—p. 1.
*Medical Care of Peptic Ulcer. H. R. Hartman, Rochester, Minn.—p. 5.
*Pulmonary Tuberculosis. F. M. Pottenger, Monrovia.—p. 9.
Teaching of Perineal Prostatectomy. F. Hinman, San Francisco.—p. 13.
*Child Who Will Not Eat. H. E. Stafford, Oakland.—p. 18.
*Blood Sedimentation Test. D. G. Tollefson, Los Angeles.—p. 20.
Kahn Precipitation Test for Syphilis. N. Evans, Los Angeles.—p. 24.
Scabies and Complications. T. J. Clark and F. J. Stibbens, Oakland. —p. 26.
Diagnosis and Treatment of Lung Abscess. F. S. Dolley, Los Angeles. —p. 28.
Carcinoma of Cervix: Surgical Treatment. H. von Geldern, San Francisco.—p. 32.
Medical Books of Famous Printers. C. D. Leake, San Francisco.—p. 36.
Extensive Fracture of Skull: Case. S. N. Jacobs and L. M. Trauner, San Francisco.—p. 40.
Self-Retaining Intra-Uterine Pessary: Case. O. McNeile, Los Angeles. —p. 41.
Surgical Catastrophes Following Overlooked Stone: Case. S. H. Mentzer, San Francisco.—p. 42.

**Intestinal Obstruction.**—The important data from the records of twenty-five cases of various types of obstruction are presented by Mason. Chloropenia was practically constant while important degrees of alkalosis or of nitrogen retention were seldom observed. The lowest blood chloride occurred in a patient suspected at first of having an obstructed bowel but who recovered without operation. The highest chloride content was observed in a patient with syphilis of the stomach in whom the pyloric obstruction was the indication for gastro-enterostomy. In this instance the patient vomited continuously, but the vomitus contained only traces of chlorides; yet the carbon dioxide content of the blood was above 100 per cent by volume for several days, and the patient was tetanic. These exceptional cases should call attention to the need of caution in formulating any hypothesis concerning the cause of toxemia and death in acute intestinal obstruction. Further studies of the acid-base balance, of the osmotic balance, and of the part played by anhydremia, inanition and toxemia may easily explain the exceptional cases encountered in any large series.

**Medical Care of Peptic Ulcer.**—Hartman points out that active peptic ulcer probably is caused by multiple factors. Experimental data offer theoretical explanations of the causes of ulcer

in the human being, namely, neurogenic influences, traumatic influences, and occult foci of infection. The activity of an ulcer seems to depend on the degree of free hydrochloric acid present. An active ulcer cannot exist in the presence of anacidity. Non-surgical relief is possible by removing the inciting factors as completely as possible and by neutralizing, with a suitable diet and alkalis, the acid that is formed in spite of means to reduce secretion. The diet prescribed is free from chemical, thermal and mechanical irritating factors. Cooperation and good general conduct of the patient, together with continuance of a suitable diet and medication after leaving the hospital, for a period of months, are of vital importance in the ultimate cure. Of equal importance is the removal of occult foci of infection.

**Pulmonary Tuberculosis.** — Pottenger emphasizes the importance of a clinical history, when accurately taken and carefully analyzed, in the diagnosis of pulmonary tuberculosis.

**Child Who Will Not Eat.**—The suggestions given by Stafford to parents in feeding children who will not eat are that (1) a well prepared meal be offered at regular times; (2) it be served in an appetizing manner; (3) the child shall come to the table in a proper mental attitude, e. g., free from fatigue; (4) the child shall remain at the table uninterrupted for thirty minutes; (5) no mention of food shall be made during or between meals.

**Blood Sedimentation Test.**—Tollefson feels that this test has a place in laboratory diagnosis when the blood count, temperature and physical observations are correlated with it. Rapid rates indicate infection. Slow readings exclude this possibility of infection, regardless of leukocytosis and elevation of temperature. It also is suggested that it might be of use as a prerequisite in the Rubin test, in the insertion of radium in benign conditions and in diagnostic curettage. As it is a simple procedure, its routine use seems justifiable because it may be a means of excluding the latent or quiescent infection, when an elective operation is under consideration, and thereby prevent prolonged convalescence, morbidity and mortality.

## Canadian M. Assn. Journal, Montreal

**22:** 1-156 (Jan.) 1930

*Significance of Ketogenesis. A. B. Macallum, London, Ont.—p. 3.
*Biliary Tract Disease: Study of 396 Cases. J. McKenty, Winnipeg.—p. 11.
*Treatment of Inoperable Carcinoma of Rectum. G. E. Binkley, New York.—p. 17.
Enlarged Thymus in New-Born. A. C. Singleton, Toronto.—p. 23.
Obstetric Emergencies in General Practice. M. E. Gorman, Lindsay, Ont.—p. 27.
*Spleen Therapy in Tuberculosis. G. F. Watson, Kitchener, Ont.—p. 31.
*Id. W. D. Swan, Hamilton, Ont.—p. 33.
Growing Importance of Diseases of Middle Life. O. Klotz, Toronto.—p. 34.
Arterial Hypertension. R. D. Rudolf, Toronto.—p. 38.
General Practitioner in Public Health. A. G. Fleming, Montreal.—p. 42.
Chronic Appendicitis. G. H. Murphy, Halifax.—p. 47.
Skin Manifestations of Syphilis. D. E. H. Cleveland, Vancouver, B. C.—p. 52.
*Primary Carcinoma of Lungs and Bronchi. G. Hodge, Montreal.—p. 60.
*Pregnancy as Cause of Disturbed Vision. J. Rosenbaum, Montreal.—p. 64.
Gastric and Duodenal Ulcer. J. W. Richardson, Calgary.—p. 67.
Value of Audiometer in Industrial Medicine. G. E. Tremble, Montreal.—p. 71.
Cavernous Angioma of Epidural Space with Compression of Spinal Cord. W. T. Connell and W. D. Hay, Kingston, Ont.—p. 75.
Carcinoma of Bronchus. H. E. MacDermot and G. Hodge, Montreal.—p. 77.
Severe Exfoliating Dermatitis from Sodium Sulphocyanate Therapy. J. D. Tyrell, Fisherville, Ont.—p. 80.
Acute Abdominal Condition Due to Oxyuris Vermicularis in Appendix. J. C. Diamond, Fort William, Ont.—p. 81.
Congenital Pyloris Stenosis in Adult. N. M. Guiou, Ottawa.—p. 82.

**Significance of Ketogenesis.**—The following explanation of ketogenesis is advanced by Macallum: 1. Of all the beta-hydroxy and beta-oxy acids formed in the metabolism of fat from its fatty acids in the beta-oxidation process in the animal body, only beta-hydroxybutyric and beta-oxybutyric acids are readily soluble in water and therefore diffusible from the cells engaged in this metabolism. In normal human subjects and in normal animals, this diffusibility leads to the appearance in the blood of traces of these acids. 2. The oxidation systems in the fat-metabolizing cells are not unlimited in the oxygen they command at any one time, and, consequently, oxidation in them is controlled by the supply which is constantly replenished from that in the blood, but to a degree not beyond the maximum that these cells are capable of receiving and utilizing from moment to moment. 3. The fat-sparing action of dextrose in the metabolism of the normal individual is, as is well known, out of all proportion to its calorigenic power. This is due, as explained, to its oxidation reducing the quantum of oxygen in the cytoplasm of the metabolizing cells, thus limiting the amount of fat which is to undergo the initial oxidation of the beta-oxidation process. On this basis the complete oxidation of 50 Gm. of dextrose would inhibit the oxidation of 228.2 Gm. of tristearin to beta-oxystearic acid. After the initial oxidation of the fat has obtained it exercises a "pull" on the oxygen available until the oxidation begun goes on to completion, thus limiting the supply of oxygen for the oxidation of more fat, and consequently, the production of beta-hydroxybutyric and beta-oxybutyric acids in amounts which can be oxidized before diffusion of them, except in traces, out into the lymph and blood can occur. 4. When sugar is unoxidizable, as in the diabetic patient, or is wanting in the normal subject after more or less prolonged fasting, nearly all the oxygen of the metabolizing cells is devoted to the oxidation of fats and relatively large quantities of the two ketone acids are formed, the diffusion pressure of which is so great that in more or less considerable quantities they pass into the blood and eventually into the urine, the remainder, small in amount, being completely oxidized in the cells where they arise. 5. In severe diabetes, after a duration more or less prolonged, the fat supply in, or immediately accessible to, the metabolizing cells has been so reduced that when fasting is resorted to the beta-hydroxybutyric and beta-oxybutyric acids are formed in such moderate quantities that they are oxidized before they can diffuse out of the cells, and they thus cease to appear in the urine. The fasting diabetic patient is then, as one may express it, nonketogenic. 6. The oxidation of sugar in the normal subject and in animals thus lessens the amount of fat oxidized, and, accordingly, reduces the amounts of the ketone acids formed from fat to the amounts which the metabolizing cells can completely oxidize before diffusion of them from such cells, except in negligible quantities, can occur. Dextrose is then "antiketogenic" or "ketolytic" only in this sense. 7. If butyric, beta-hydroxybutyric and beta-oxybutyric acids were as insoluble in water and, consequently, as indiffusible as caproic and beta-oxycaproic acids, from which they are derived by the beta-oxidation process, they would remain, as do the last named acids, in the fat-metabolizing cells where they are formed and there be completely oxidized, even when produced in considerable amounts. Then carbohydrates in the diet could be dispensed with, and the only carbohydrate then available to insure muscular efficiency would be the dextrose derived from the metabolism of proteins. In diabetes there would still be glycosuria, but no acidosis and no menace of coma, and the life of the diabetic patient could be more or less indefinitely prolonged, but, very possibly, with the handicap of diminished physical efficiency. Ketogenesis would then be unknown or not cognizable.

**Biliary Tract Disease.**—McKenty urges that all gallbladders containing the common mixed stone should be removed. Cholecystostomy should be limited to the cases that are bad risks and those showing the pure cholesterin stone in a functioning gallbladder and, possibly, the pure pigment stone. The full benefit of cholecystectomy is sometimes delayed for more than a year after operation. Cholecystostomy brings complete relief earlier, but if patients are followed long enough recurrence will be found to occur in one third of them. The neurotic patient is but little benefited by the removal of a diseased nonfunctioning gallbladder or vermiform appendix, and is sometimes made worse. His major malady, the neurasthenia, is aggravated at least temporarily.

**Treatment of Inoperable Carcinoma of Rectum.**—Binkley is convinced that experience has proved radiation therapy to be extremely valuable in the treatment of carcinoma of the rectum. When used alone in selected operable cases it is capable of producing the same satisfactory results as radical surgical removal, while in the inoperable group a greater degree of palliation is afforded by radiation therapy alone, or by the combined use of radiation therapy and palliative surgical measures, than by any other present-day method of treatment.

**Spleen Therapy in Tuberculosis.**—Watson has tried spleen extract in malignant conditions and in tuberculosis. The results in the former were not encouraging but in the latter were decidedly so. Six patients with early tuberculosis have shown a definite increase in weight and appetite, red blood cells and hemoglobin. The gray pallor of the face changed to a healthier tone and they feel much better. Two cases of Hodgkin's disease have also been benefited in conjunction with the roentgen ray.

**Spleen Therapy in Tuberculosis.**—Swan concludes that spleen extract has a specific effect in tuberculosis.

**Primary Carcinoma of Lungs and Bronchi.**—Hodge urges that all patients in the cancer age having obscure pulmonary symptoms, whose cause has not been determined by roentgen and clinical examination, should have a bronchoscopic examination.

**Pregnancy as Cause of Disturbed Vision.**—In the three cases reported by Rosenbaum, primary optic atrophy, retrobulbar neuritis and secondary optic atrophy are attributed directly to pregnancy. A fourth case of cataract formation and a fifth of chronic glaucoma are more or less borderline cases, and while many factors may have had some influences in the production of the changes, nevertheless from the history of the patients Rosenbaum thinks that they should properly be placed under the heading of complications of pregnancy.

## Canadian Public Health Journal, Toronto

**21** 1-52 (Jan.) 1930

Health Opportunities in Industry. O. A. Cannon, Hamilton, Ont.—p. 1.
Hemorrhagic Diphtheria. B. Hannah, Toronto.—p. 9.
Sanitary Units in Province of Quebec. L. R. Vezina, Montreal.—p. 16.
County Health Units in Province of Quebec. L. R. Vezina, Montreal.—p. 21.
Why Not a Uniform Method of School Medical Inspection? F. S. Burke, Ottawa.—p. 23.
Mental Hygiene of Childhood. C. M. Hincks.—p. 26.

## Georgia M. Assn. Journal, Atlanta

**19:** 1-42 (Jan.) 1930

Future of Small School of Nursing in Georgia. J. Van De Vrede, Atlanta.—p. 1.
Round Worm Infection in Children: Case. R. C. Goolsby, Jr., Macon.—p. 6.
Diagnosis of Diseases of Duodenum. R. C. Pendergrass, Americus.—p. 9.
Roentgen Therapy. T. Harrold, Macon.—p. 13.
Spinal Manometer as Aid in Diagnosis of Lateral Sinus Thrombosis. B. A. Olds, Atlanta.—p. 16.
Cretinism: Case. W. W. Anderson, Atlanta.—p. 18.
Eyes as Cause of Headaches. W. O. Martin, Jr., Atlanta.—p. 21.
Skin Cancer. J. W. Jones and H. S. Alden, Atlanta.—p. 23.
Consideration of Dual Rôle of Gonococcus. G. M. Murray, Atlanta.—p. 25.
Spinal Anesthesia. W. J. Rollins, Macon.—p. 28.
Pellagra. J. D. Middlebrooks, Powder Springs.—p. 31.

## Journal of Infectious Diseases, Chicago

**46:** 1-83 (Jan.) 1930

Preparation and Antigenic Properties of Carbon Monoxide Hemoglobin. A. K. Boor and L. Hektoen, Chicago.—p. 1.
Vibriothrix Tonsillaris N. Sp. R. Tunnicliff and L. Jackson, Chicago.—p. 12.
Two Viruses in Endemic Typhus (Mexican Tabardillo). J. Zozaya, Mexico City, Mexico.—p. 18.
*Action of Pancreatic Juice on Bacteria. A. A. Day and W. M. Gibbs, Chicago.—p. 26.
Acute Anterior Poliomyelitis at Vega Baja, Porto Rico. E. G. Morales, San Juan, Porto Rico.—p. 31.
*Comparative Values of Antianthrax Serum and of Neoarsphenamine in Treatment of Experimental Anthrax. T. J. Kurotchkin and H. A. Reimann, Peiping, China.—p. 36.
*Attempts to Produce Acute Glomerulonephritis in Rabbits with Peritoneal Lysate of Streptococcus Scarlatinae. A. F. Reith, L. M. Warfield and N. Enzer, Milwaukee.—p. 42.
Incidence of Middle Ear Infection and Pneumonia in Albino Rats at Different Ages. J. B. Nelson and J. W. Gowen, Princeton, N. J.—p. 53.
Bacteria of Infected Middle Ear in Adult and Young Albino Rats. J. B. Nelson, Princeton, N. J.—p. 64.
*Purification and Concentration of Scarlet Fever Toxin. L. E. Shinn, Chicago.—p. 76.

**Action of Pancreatic Juice on Bacteria.**—Experiments made by Day and Gibbs indicate that the pancreatic juice of the dog has bactericidal properties which may play a part in the normal defense of the pancreas against infection.

**Comparative Values of Antianthrax Serum and of Neoarsphenamine in Treatment of Experimental Anthrax.**—Kurotchkin and Reimann report that of three patients with cutaneous anthrax receiving neoarsphenamine, two recovered. In order to obtain further information in regard to the comparative value of antianthrax serum and of neoarsphenamine, experiments were made on the treatment of anthrax infections in laboratory animals. Specific immune serum was found to be of no value in treating experimental anthrax infections in mice, guinea-pigs or rabbits. Neoarsphenamine was also of no value in the treatment of anthrax infection in mice and rabbits according to the technic used. Neoarsphenamine was apparently of distinct therapeutic value in guinea-pigs when it was injected simultaneously with ordinarily fatal doses of anthrax bacilli.

**Attempts to Produce Acute Glomerulonephritis in Rabbits with Peritoneal Lysate of Streptococcus Scarlatinae.**—In an attempt to repeat the work of Duval and Hibbard on the experimental production of acute glomerulonephritis in rabbits, Reith and his associates were unable to produce in the peritoneal cavity of immune rabbits a sterile bacteriolysate containing the alleged endotoxic principle of scarlatinal streptococci. Rabbits given intravenous injections of the filtered or centrifugated peritoneal fluid of previously immunized rabbits which were given an intraperitoneal mass dose of homologous scarlatinal streptococci from two to three hours before the peritoneal fluid was drawn did not show symptoms of toxemia. At necropsy the kidneys of some of these rabbits had lesions resembling some of the lesions described by Duval and Hibbard which they asserted were the result of acute glomerulonephritis of the scarlet fever type. However, similar lesions were observed by the authors in the kidneys of normal healthy rabbits and rabbits given injections of bacterial suspensions other than scarlatinal streptococci. None of the rabbits showed lesions typical of scarlet fever nephritis.

**Purification and Concentration of Scarlet Fever Toxin.**—Experiments made by Shinn indicate that a lethal dose of scarlet fever toxin for rabbits has not been established. Although rabbits were given intravenous injections with more than seven times the dosage of scarlet fever toxin designated by Hartley as the lethal dose for rabbits, no specific lethal action of the toxin was demonstrated. It was possible to concentrate scarlet fever toxin by precipitation with sodium sulphate and acetic acid. Attempts to obtain further purification by fractional precipitation with sodium sulphate was unsuccessful. Attempts to concentrate scarlet fever toxin by precipitation with acetic acid alone were not successful. Precipitation with acidified alcohol gave the most uniform and the best results.

## J. Pharmacol. & Exper. Therapeutics, Baltimore

**38:** 1-144 (Jan.) 1930

*Cobalt as Vasodilator. J. M. Le Goff, Paris.—p. 1.
Effect of Certain Drugs on Oxidation Processes of Mammalian Nerve Tissue. M. A. F. Sherif, Cambridge.—p. 11.
Action of Some Heart Tonics. E. Leyko, London.—p. 31.
Effect of Ammonium Chloride on Development of Rigidity in Experimental Local Tetanus. H. H. Dixon and S. W. Ranson, Chicago.—p. 51.
Biochemical Studies on Absorption of Ethylester of Paramethylphenylcinchoninic Acid (Tolysin) and Fate in Metabolism: I. Absorption of Tolysin from Intestinal Tract. O. Fürth and E. Kuh, Vienna.—p. 57.
Id.: II. Fate of Tolysin in Metabolism and Toxicity. O. Fürth and E. Kuh, Vienna.—p. 71.
Simultaneous Recording of Peristalsis and Action of Pyloric Valve in Isolated Stomach of Frog: I. Influence of Acidity and Basicity. J. L. Serby and M. S. Dooley, Syracuse, N. Y.—p. 85.
Studies on Pupillary Reactions in Tetrapods: VI. Mode of Action of Ergotamine. T. Koppányi, New York.—p. 101.
Id.: VII. Sympathetic Actions of Cocaine, Procaine and Pilocarpine. T. Koppányi, New York.—p. 113.
Experimental and Clinical Studies of Ergotamine: I. Effect of Ergotamine on Blood Sugar and Epinephrine Hyperglycemia in Trained Unanesthetized Dogs. J. B. Youmans and W. H. Trimble, Nashville, Tenn.—p. 121.
*Id.: Effect of Ergotamine on Heart Rate of Trained, Unanesthetized Dogs. J. B. Youmans and W. H. Trimble, Nashville, Tenn.—p. 133.

**Cobalt as Vasodilator.**—Le Goff's experiments showed that the main and outstanding effect of cobalt compounds is the vasodilatation of the blood vessels of the face and the ears, with a fall in blood pressure. This redness of the face seems

to be produced by a paralyzing action of cobalt on the sympathetic system. A few centigrams of cobalt compounds, from 1 to 5, are not toxic for man.

**Effect of Ergotamine on Heart Rate of Trained, Unanesthetized Dogs.**—Youmans and Trimble conclude from their studies that in human subjects the effects of ergotamine on the heart rate are due principally to an action on the vagus mechanism similar to that in normal intact dogs.

## Journal of Preventive Medicine, Chicago

**4:** 1-103 (Jan.) 1930

Streptococci from Cases of Epidemic Septic Sore Throat, Scarlet Fever and Erysipelas. M. W. Wheeler, Albany, N. Y.—p. 1.
Absorption of Bactericidal Ultraviolet Rays by Screens of Known Visual Opacity. H. Welch and R. G. Perkins, Cleveland.—p. 15.
Morbidity and Association of Morbid Conditions. E. B. Wilson, Boston.—p. 27.
*Epidemiology of Diphtheria and Scarlet Fever in Subtropics: Syrian States Under French Mandate. L. W. Parr, R. H. Goodale and H. Krischner, Beirut, Syria.—p. 39.
*School Health Survey in Aleppo, Syria. E. H. Hudson, I. F. Manley and A. L. Young, Deir-ez-Zor, Syria.—p. 49.
Effect on Animals of Inoculation with Virus of Poliomyelitis: I. Rabbits. P. H. Harmon, H. J. Shaughnessy and F. B. Gordon, Chicago.—p. 59.
Id.: Dogs, Cats, Guinea-Pigs, Mice and Other Animals. P. H. Harmon, H. J. Shaughnessy and F. B. Gordon, Chicago.—p. 89.

**Epidemiology of Diphtheria and Scarlet Fever in Subtropics.**—Dick and Schick tests made by Parr et al. on 878 persons living in the Syrian states under French mandate show that the people of this area possess a remarkably high resistance to the toxins of diphtheria and scarlet fever. A study of government reports of morbidity and mortality and a medical census of 2,301 persons show that clinical cases of scarlet fever are rare and that diphtheria is only slightly more common. It is suggested that subclinical diphtheria is common and that it is probably the cause of the diphtheria immunity. As regards scarlet fever there is less evidence that subclinical immunization is responsible for the existing immunity. In view of prevalent streptococcal infections of the throat and middle ear and the low puerperal sepsis rate, it is possible that immunity against puerperal sepsis and scarlet fever is built up at an early age by infections with the streptococcus in other and milder clinical forms. Measles is common in the area in question. This lends support to the view that the etiologic agent of this disease has no close relationship to that of scarlet fever. Further, for tropical and subtropical countries at least, measles may be thought of as a younger disease than either diphtheria or scarlet fever.

**School Health Survey in Aleppo, Syria.**—A health survey made by Hudson et al. of 150 children in the mission schools of Aleppo, Syria, indicates that Syrian school children suffer from much the same conditions as school children elsewhere. Visual errors, intestinal infestations and adenopathy were common. A high incidence of conjunctivitis and several cases of trachoma were encountered.

## Kansas M. Soc. Journal, Topeka

**31:** 1-40 (Jan.) 1930

Early Diagnosis and Treatment of Infantile Paralysis. C. B. Francisco, Kansas City.—p. 1.
Suggestions Concerning Successful Management of Appendicitis. J. N. Dieter, Abilene.—p. 3.
Is a Physician Ever Justified in Recommending Raw Cow's Milk? L. B. Gloyne, Kansas City.—p. 8.
Skin and Mucous Membrane Manifestations of Late and Latent Syphilis. E. A. Pickens, Wichita.—p. 14.
Physiotherapy. F. C. Gasser, Cherryvale.—p. 16.
*Acute Lymphatic Leukemia: Unusual Case. J. L. Collins, Kansas City.—p. 19.

**Acute Lymphatic Leukemia.**—The most interesting features of Collins' case were the large swelling and mass in the mediastinum (which was at first considered Hodgkin's disease) and the striking manner in which this bulging mass melted away under roentgen therapy. The case later developed into a typical acute lymphatic leukemia, with a typical course. The acute nephritis was unusual and the large amount of urinary blood was also a striking feature. The necropsy revealed infiltrations in the heart, lungs, liver, spleen, kidneys, mediastinum and parietal pleura; petechial hemorrhages in the subcutaneous, subserous and submucosal surfaces; acute fibrinous pleurisy with hemorrhagic effusion into the right pleural cavity; acute hemorrhagic nephritis, and parenchymatous degeneration of the heart and liver.

## Maine Medical Journal, Portland

**21:** 1-15 (Jan.) 1930

Review of Twenty-Five Years of Observation in Maine in Tuberculosis Field. E. Nichols, Portland.—p. 3.
Asthma Report on Clinical Work in Maine During Last Eight Years. C. B. Sylvester, Portland.—p. 7.

## New England J. of Medicine, Boston

**202:** 57-102 (Jan. 9) 1930

Institute of Human Relations at Yale University. M. C. Winternitz, New Haven, Conn.—p. 57.
Diagnosis of Renal Stone. A. L. Chute, Boston.—p. 60.
Treatment of Renal and Ureteral Calculi. R. F. O'Neil, Boston.—p. 63.
Results of Renal Calculus. J. D. Barney and J. L. Watson, Boston.—p. 67.
*Duodenal Fistula. T. W. Worthen, Hartford, Conn.—p. 76.
Papyraceous Twins in Quadruple Pregnancy. J. Tartakoff, Jamaica Plain, Mass.—p. 78.

**202:** 103-150 (Jan. 16) 1930

Irradiation as Means of Treating Cancer. H. K. Pancoast, Philadelphia.—p. 103.
Lithotomies Performed by Dr. Gardiner of Boston, 1738 and 1741. R. F. Seybolt, Urbana, Ill.—p. 109.
Surgical Clinic in Dispensary. W. E. Hartshorn, New Haven, Conn.—p. 110.
What Can Members of New England Surgical Society Do To Improve Treatment of Fractures? C. L. Scudder, Boston.—p. 116.
Compressed Air Rupture of Intestines. D. C. Patterson, Bridgeport, Conn.—p. 118.
Argument in Favor of Vaccination, with Statistics of Incidence of Smallpox in United States, Its Dependencies and Canada. S. B. Woodward, Worcester, Mass.—p. 122.
Progress in Urology, 1928-1929. H. H. Howard, Boston.—p. 125.

**Duodenal Fistula.**—An external duodenal fistula found by Worthen to be the underlying cause in the persistence of an abdominothoracic fistula and yet with a discharge insufficient to excoriate the skin presented a problem the successful solution of which was directly dependent on the injection of iodized oil.

## New Jersey M. Soc. Journal, Orange

**27:** 1-90 (Jan.) 1930

Dissertation on State of Physick in Colony of New Jersey. G. H. Lathrope, Newark.—p. 1.
Ethyl Ether of Hydroxydiamino-asobenzol. M. W. Openchowski, Newark.—p. 10.
Laboratory Control of Certified Milk on Farm. J. G. Hardenbergh, Plainsboro.—p. 12.
Production of Sensitivity to Horse Serum by Diphtheria Toxin-Antitoxin. J. M. Mitchell, Bryn Mawr, Pa.—p. 16.
Pneumococcus in Nephrosis. W. B. Stewart, Atlantic City.—p. 21.
Suggestions for Modification of Operative Procedure and Postoperative Treatment of Submucous Resections. C. S. McGivern, Atlantic City.—p. 28.
Various Methods of Tonsillectomy. C. F. Adams, Trenton.—p. 31.
The Doctor. W. H. James, Pennsville.—p. 35.
Business Side of Practice of Medicine. A. F. Van Horn, Plainfield.—p. 37.
Thin Well Children. C. G. Kerley, New York.—p. 39.
Results of Immunization with Diphtheria Toxoids as Compared with Toxin-Antitoxin. H. L. Fuerstman, Newark.—p. 41.
Rheumatic Headache. H. W. Haight, New Brunswick.—p. 43.

## Northwest Medicine, Seattle

**29:** 1-50 (Jan.) 1930

Mechanics of Colon. W. E. Gatewood, Portland, Ore.—p. 1.
Tumors of Urinary Bladder. A. H. Peacock, Seattle.—p. 7.
Trichomonas Vaginalis. A. Mathieu, Portland, Ore.—p. 15.
Management of Gonococcal Pelvic Infection. M. S. Sichel, Portland, Ore.—p. 18.
Combined Intra-Articular and Extra-Articular Fusion of Tuberculous Hip C. F. Eikenbary and J. F. Le Cocq, Seattle.—p. 23.
*Antirachitic Action of Activated Ergosterol. C. U. Moore, H. G. Dennis and B. I. Phillips, Portland, Ore.—p. 26.
Inguinal Hernia. M. S. Rosenblatt, Portland, Ore.—p. 32.
Pyelophlebitis of Appendicular Origin: Case. C. F. Schiltz, American Falls, Idaho.—p. 36.
*Effect of Vitamin D on Blood Coagulation Time. J. C. Brougher, Vancouver, Wash.—p. 38.

**Antirachitic Action of Viosterol.**—A report is made by Moore et al. of 113 patients who were given varying doses of viosterol over a period of several months. Three of these were

pregnant mothers who received 6 drops daily from the third to the ninth months. All of them reported an unusual sense of well being during pregnancy and were delivered without difficulty of well developed and vigorous children. These babies had less craniotabes and costomalacia than the average. Forty-three of the children reported on were new-born babies. Those who received 10 drops of viosterol daily were noticeably superior to those not receiving it. They were more vigorous, nursed more avidly and regained their birth weight most rapidly. All of the new-born infants who were followed for several months developed definite signs of rickets, even though they received from 6 to 10 drops of viosterol. When the dosage was increased to from 20 to 30 drops, active rickets rapidly disappeared. From this study the authors recommend dosages as follows: (*a*) pregnant women, from 10 to 20 drops from the third to the beginning of the ninth month; (*b*) newborn infants, 20 drops daily; (*c*) twins and premature children, 30 drops daily; (*d*) children with active rickets, from 20 to 30 drops daily; (*e*) children to and through puberty, from 10 to 20 drops daily to prevent and cure postural defects.

**Effect of Vitamin D on Blood Coagulation Time.**—When the blood coagulation time is usually long, as in acute infections, syphilis, obstructive jaundice and diseases of the hematopoietic system, Brougher says that cod liver oil or viosterol, when given orally, changes the long coagulation time to normal within four hours.

## Southwestern Medicine, Phoenix, Ariz.

**14:** 1-44 (Jan.) 1930

Peptic Ulcer: Limitations of Surgical and Medical Treatment. F. D. Garrett, El Paso, Texas.—p. 1.
Surgical Aspects of Gastric Ulcer. R. L. Ramey, El Paso, Texas.—p. 5.
Perforating Duodenal Ulcer. J. W. Hannett, Albuquerque, N. M.—p. 6.
Lessons Taught by Necropsy in Pulmonary Tuberculosis. G. H. Faget, Fort Stanton, N. M.—p. 11.
Extrathoracic Tuberculous Lesions in Childhood. J. A. Myers, Minneapolis.—p. 16.
Clinical Symptoms in Prognosis of Tuberculosis. J. D. Riley, El Paso, Texas.—p. 20.
Chronic Mastoiditis Complicated by Right Lateral Sinus and Jugular Bulb Thrombosis, Meningitis and Brain Abscess. J. J. McLoone, Phoenix, Ariz.—p. 23.

## Tennessee State M. Assn. Journal, Nashville

**23:** 1-38 (Jan.) 1930

Spastic Colitis. S. P. Bailey, Nashville.—p. 1.
Problem of Colloid Goiter. W. C. Chaney, Memphis.—p. 8.
Paranasal Sinus Disease an Etiologic Factor in Mastoid Disease. M. M. Cullom, Nashville.—p. 13.
Indications for Use of Radiation in Diseases of Female Pelvis. W. S. Lawrence, Memphis.—p. 17.
Study of Five Hundred Breast Cases with Surgical End-Results. W. O. Floyd and W. D. Haggard, Nashville.—p. 24.

## Virginia Medical Monthly, Richmond

**56:** 641-712 (Jan.) 1930

Extrasystole. J. W. Hunter, Jr., Norfolk.—p. 641.
*Effects of Paralysis of Diaphragm in Treatment of Pulmonary Tuberculosis. R. H. Meade, Jr., University, and F. B. Stafford, Sanatorium. —p. 649.
*Abdominal Manifestations of Tetany. W. H. Higgins, Richmond.—p. 653.
*Experience with Old Typhoid Vaccine in Treatment of Focal Infections. C. P. Jones, Newport News.—p. 658.
Medical Jazz: Plea for Harmony in Medicine. R. K. Flannagan, Richmond.—p. 659.
Some Cases. C. S. Webb, Bowling Green.—p. 662.
Aspects of Periodic Examination. A. A. Houser, Richmond.—p. 664.
*Relation Between Focal Infections and Angina Pectoris. J. H. Smith, Richmond.—p. 666.
*Typhus-Like Fever Following Tick Bite: Case. R. D. Glasser, Norfolk. —p. 670.
*Tuberculosis of Ileocecal Valve: Report of Unusual Case of Intestinal Obstruction. W. M. Yater, Washington, D. C.—p. 671.
*Peptic Ulcer: Clinical Problem in Light of Experimental Data. C. B. Morton, University.—p. 673.
Acute Abdomen. H. M. Hayter, Abingdon.—p. 677.
Cesarean Section. R. P. Kelly, Lynchburg.—p. 679.
Infectious Mononucleosis: Case. H. W. Potter, Newport News.—p. 682.
Sterilization by Vasectomy Under State Law. H. C. Grant, Staunton. —p. 683.

**Effects of Paralysis of Diaphragm in Treatment of Pulmonary Tuberculosis.**—The principal effects of paralysis of the diaphragm on the treatment of pulmonary tuberculosis, as observed by Meade and Stafford, were: (1) loss of motion; (2) elevation; (3) relaxation of adhesions between the diaphragm and the lung, and (4) increased efficiency of pneumothorax by aiding in immobilization of the mediastinum and in decreasing movements of the compressed lung.

**Abdominal Manifestations of Tetany.**—A record of the clinical history and roentgen observations in a patient suffering from visceral tetany is given by Higgins. Pictures were taken during an attack which showed an obliterative spasm of the small intestine, but were normal when repeated during a quiescent period. At operation the ileum for a distance of more than 50 cm. was found contracted to the size of a lead pencil with no evidence of any organic changes. The author regards this as being a cause of abdominal pain in tetany.

**Experience with Old Typhoid Vaccine in Treatment of Focal Infections.**—Jones reports having had gratifying results in cases of muscle pains from the subcutaneous injection of old typhoid vaccine, 1,500 million cc. standard, 4 minims (0.24 cc.), the dose being increased 1 minim (0.06 cc.) every third day as long as necessary. He has never given more than 1 cc. at a dose.

**Relation Between Focal Infections and Angina Pectoris.**—Twenty-three cases are analyzed by Smith. Focal infections were present in all of these cases. As to the results of treatment, fourteen patients were improved; three showed no improvement; four died, and two cannot be traced for the record.

**Typhus-Like Fever Following Tick Bite.**—The tick concerned in the case reported by Glasser was *Amblyomma americanum*. This tick is an occasional parasite of man but has never been implicated in the transmission of disease. The case is reported because of the association of the illness with tick bites, the consistently negative agglutination of *B. proteus* $X_{19}$ and the failure to reproduce the disease in laboratory animals.

**Tuberculosis of Ileocecal Valve.**—In Yater's case, one of hyperplastic tuberculosis of the ileocecal region in a man, aged 22, the stenosis had existed for several years. The contents of the ileum, ordinarily of fluid consistency, had trickled through the small ileocecal channel until the patient had partaken of a feast of watermelon seed, which acted as a nidus for the formation of a ball-valve fecal bolus. An ileostomy was done high up in the ileum and a large tube inserted. At the close of the operation the pulse was rapid and weak. After reacting from the anesthesia, the patient vomited. Fluid was administered by hypodermoclysis and by retention enema. During the night the patient became irrational and got out of bed. Early in the morning he died while attempting again to leave his bed. Necropsy was of interest only as regards the abdomen. This was distended, the distention being due to ileus of the colon and dilatation of the lower 5 feet of the ileum. There was no gross evidence of peritonitis. The terminal 5 feet of the ileum was dark but not gangrenous and was fairly well demarcated from the rest of the small intestine. The affected portion of the ileum contained a large quantity of dark brownish, semisolid fecal material. The muscularis was enormously thickened, the wall being approximately 3 mm. thick. This thickening involved the ileocecal opening, which hardly admitted the point of ordinary hemostatic forceps. This small channel, however, was almost 2 cm. long. There was no evidence of ulceration or induration of the so-called ileocecal valve. The mucosa of the ileum showed only postmortem discoloration. The colon appeared normal. The ileocecal anastomosis was intact. Evidence of tuberculosis was not found in the entire body.

**Peptic Ulcer.**—Morton analyzes previously reported experiments on the etiology of peptic ulcer. The data suggest that in each case the withdrawal of alkaline juices from the region of the pylorus by surgical duodenal drainage induced the formation of peptic ulcer and accounted for its chronicity. The site of the ulceration in each case was determined by the point at which the forces of acid ejections from the stomach converged. Healing ensued when the alkaline juices were reintroduced into the region of the ulcer and when the forces of the acid ejections were diffused or counteracted.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

**1:** 55-96 (Jan. 11) 1930

*Localization of Function in Nervous System. J. Collier.—p. 55.
Control of Ocular Disease of Venereal Origin. G. Mackay.—p. 61.
*Atypical Enteric Infections. J. D. A. Gray.—p. 64.
Reversible Bed Frame for Spinal and Other Special Cases. E. W. H. Groves.—p. 66.
*Relation of Orthodox Rheumatic Infection to Multiple Infective Arthritis. V. Coates.—p. 67.
*Effects of Warm Immersion Baths on Circulation. G. Holmes.—p. 68.
*Foreign Body in Right Bronchus of Baby. V. Smallpeice.—p. 69.
Chronic Rhinitis in Children. L. Naish.—p. 69.

**Localization of Function in Nervous System.**—In the consideration of a faculty of the nervous system, Collier says it is just to locate the function in the whole of the anatomic substratum connected with it, and not in any one part of it. The substratum is a path commencing in the periphery, entering the central nervous system and converging with other paths which modify its function at each convergence; entering the cortex of the brain and spreading widely with infinite convergences and modifications of function and gathering again, thence to return to the periphery. So far as this path is compact and single it is vulnerable to local destructions. So far as it is diffuse or duplicated in another place, it is not vulnerable. In the cortex of the brain the paths soon become diffused. Keeping away from those regions of the cortex through which the compact single paths to and from the periphery are known to pass, and ablations, will produce no loss of function, for the path is here too widely spread and the function too widely distributed to be influenced by small local loss; nor will such terms as "annexes," "association areas," or the word "psycho" prefixed to any word one may wish offer a satisfactory interpretation, in the absence of any definite evidence, of the functions of the highest product of evolution—the cerebral cortex. The chief difference between the brain of a bird, in which no ablation produces local loss of function, and that of a mammal, in which ablations in certain definite regions produce temporary loss of function, and again between these two and the brain of man, in which certain ablations produce permanent loss, seems to lie in the progressive development as one ascends the animal scale of direct and compact paths to and fro between the cerebral cortex and the periphery, and these paths tend to become exclusive as regards a definite function in the highest animal; whereas in the less high animal the indirect and ancestral path is still utilizable when the direct path is injured. The brain of all the higher animals must be built up structurally and functionally more or less on the same plan. It is obvious that each region of the cerebral cortex must be of equal functional importance in the make-up of the perfect animal; yet it is difficult to give up the belief that those regions of the cortex which immediately border on the junctions of the cortex with the sensory path, the visual path, the auditory path, and the pyramidal path are more especially connected with the functions these paths subserve. But it must be carefully borne in mind that the evidence in favor of this belief, on the experimental side, is solely the facilitation experiments of Graham Brown, while on the clinical side there is no certain evidence whatever.

**Atypical Typhoid Infections.**—In one of the cases cited by Gray the clinical and bacteriologic data suggest an acute exacerbation of a chronic cholecystitis due to *B. paratyphosus* B Schottmüller. In another case the finding of *B. paratyphosus* B Schottmüller in the interior of one of the stones was regarded as strong evidence that it was the primary etiologic agent concerned in the production of the stone. The third case was peculiar in that, although the heart blood, spleen, bile and intestinal contents did not show evidence of the presence of *B. paratyphosus* B Schottmüller, the organism was found in the gallbladder wall. The clinical and bacteriologic data in the fourth case suggest an acute primary infection, and illustrate how such a condition may simulate an acute abdominal lesion—for example, acute appendicitis. The clinical picture presented by the four cases was indefinite. The most marked feature was the severity of the toxemia in relation to the vagueness of the subjective and objective phenomena. The first patient was ill for only four days, the second for eight, the third for six, and the fourth for eighteen days. Generalized abdominal pain was common to all of the cases, and three of the four patients had vomiting and diarrhea. In all, at least part of the abdomen was flaccid, and the rigidity, when present, was only slight. The absence of recognizable enlargement of the spleen and of rash was noteworthy. The temperature in all but one of the cases recorded failed to show the classic steplike rise, and a low pulse-temperature ratio was not present in any of the cases. A plea is made for thorough bacteriologic examination of patients with vague abdominal symptoms which do not correspond closely to any mild digestive disturbance or acute abdominal condition.

**Relation of Orthodox Rheumatic Infection to Multiple Infective Arthritis.**—The incidence of orthodox rheumatic infection in the immediate family history in fifty consecutive cases of multiple infective arthritis was found by Coates to be 32 per cent. A low estimate of orthodox rheumatic infection in 300 consecutive cases of multiple infective arthritis is nearly 5 per cent. The cardinal signs of orthodox rheumatic infection —namely, carditis and (or) subcutaneous nodules—were present in these cases in the following percentages: cardiac lesions only without a history of rheumatic fever, 2.33 per cent; subcutaneous lesions only without a history of rheumatic fever, 4.33 per cent; cardiac lesions in the whole series, 4 per cent; subcutaneous lesions in the whole series, 6 per cent.

**Effects of Warm Immersion Baths on Circulation.**—The principal circulation effects noted by Holmes during immersion baths at 103 F. in normal subjects were: (1) rise in the pulse rate; (2) maintenance, or increase, of systolic pressure, allowing for slight alterations in the position of the arm; (3) fall in the diastolic pressure; (4) changes in the pressure levels at which modifications of the Korotkow sounds occur; (5) persistence of these sounds down to 0 mm. of mercury in certain readings, and (6) prompt return toward normal when the subject is cooled down on completion of the bath.

**Foreign Body in Right Bronchus of Baby.**—In the case cited by Smallpeice, a flower spike of grass passed through the upper air passages and lung tissue and presented beneath the chest wall. Little disturbance was caused.

### Journal of Mental Science, London

**75:** 573-850 (Oct.) 1929

Fear and Worry. N. Raw.—p. 573.
Account of Report of Joint Mental Deficiency Committee of Board of Education and Board of Control, 1929. A. F. Tredgold.—p. 584.
Modern Approach to Problem of Admission of Mental Patients to Inpatient Treatment. J. R. Lord.—p. 596.
Cases of Mental Disorder: Pathoclinical Study. W. M. Ford-Robertson. —p. 618.
*Charcot's Disease in Taboparesis. G. F. Peters.—p. 639.
*Investigation into Distribution of Chlorine in Blood and Urine in Certain Types of Mental Disorder. R. W. Armstrong.—p. 644.
Recent Work on Pathology of Schizophrenia. F. L. Golla.—p. 661.
Psychologic Differences Between Psychoses, Psychoneuroses and Character Formations. M. E. Franklin.—p. 671.
Treatment of Epilepsy. J. P. Steel.—p. 685.
Corper's New Culture Method for Tubercle Bacillus. S. M. Allan.—p. 690.
Sex Variations in Excitation Process Composition. W. Burridge.—p. 693.
Excitation Processes of Love and Fanaticism. W. Burridge.—p. 697.

**Charcot's Disease in Taboparesis.**—In all three cases reported by Peters there was a family history of serious mental or nervous instability, so extreme in one case as to have led to certification. The earlier the age at which the Charcot joints occurred in the respective patients, the more severe and widespread were the lesions, and it was in the juvenile case that Charcot's disease was most marked in an uncommon situation, namely, the spinal column. In the juvenile case the Charcot lesion had existed for seventeen years before signs of mental disorder made it necessary for the patient to be certified. The patient who was 41 years old when she was admitted to Horton had had signs of mental disorder for a year and ten months before the Charcot joint appeared. The patient who was 50 on admission had been under certificate for about seven years before the joint lesion occurred. It was the Charcot lesion in two of the cases that first drew attention to the patient's physical condition. In two of the cases there was a

definite history of injury to which the condition was at first attributed, and several falls were suffered by the third patient prior to the appearance of the lesion. One of the patients noticed symptoms of tabes dorsalis for the first time soon after giving birth to a child, and had another complete pregnancy after she had lost power in her fingers, arms and legs.

**Investigation into Distribution of Chlorine in Blood and Urine in Certain Types of Mental Disorder.**—Following the increased respiratory ventilation after waking in the morning, the normal person shows an increased output of chlorides in the urine. In the psychotic patients examined by Armstrong there is a varying degree of retention of chlorides over the same period associated with a varying degree of defect in respiratory regulation. In catatonic dementia praecox there appears to be a reversal of the normal shift of chloride from plasma to corpuscle during sleep. Evidence has been adduced to show that there is a heavy acid load on the corpuscles in these patients during the waking state, that their pulmonary ventilation is inadequate, and that the decrease in metabolic rate during sleep causes a fall in the alveolar carbon dioxide tension and a consequent decrease in the acid load of the corpuscles. In normal persons exercise appears to have no effect on the distribution of chloride between plasma and corpuscles, while in catatonic dementia praecox the same amount of exercise causes a decrease in the acid load of the corpuscles consequent on a decrease in alveolar carbon dioxide tension. It is suggested that a degree of exercise sufficient to cause increased respiratory ventilation will have a beneficial therapeutic effect on these patients.

## Lancet, London

**1:** 1-60 (Jan. 4) 1930

Dumping Ground of Neurasthenia. E. F. Buzzard.—p. 1.
Clinical Applications of Newer Conceptions in Physiology of Eye. W. S. Duke-Elder.—p. 4.
*Treatment of Perforated Peptic Ulcer. H. Williams and C. H. Walsh.—p. 9.
Parathyroid Tetany and Cataract. L. Cole.—p. 13.
Treatment of Puerperal Septicemia by Serum. H. Burt-White.—p. 16.
Treatment of Gonorrhea in Male. H. D. L. Spence.—p. 19.
Treatment of Malignant Tumors with Radium Catgut. E. Joseph.—p. 21.
Pernicious Anemia not Responding to Liver Treatment: Case. A. C. Hampson.—p. 22.
*Internal Splinting for Fractures. R. E. Pascal.—p. 22.

**Treatment of Perforated Peptic Ulcer.**—Williams and Walsh record the results in 158 cases of perforation of the stomach and duodenum. Their practice has been to operate in all cases without selection—to close the perforation, to drain the peritoneal cavity, never to do primary gastrojejunostomy, and to complete the operation with all speed. In this series 152 were males and six were females. Two of the cases in females were duodenal perforations and the remaining four were gastric. Of the 158 cases, 124 were duodenal and thirty-four gastric. In no case was more than one perforation found at the time of operation. Recurrence of perforation at the same site occurred in three cases: in one after an interval of eleven months, in another after four years, and in the remaining case after five years. In two of these cases no gastrojejunostomy had been performed; in the third gastrojejunostomy was performed but was undone at a later date for jejunal ulceration. Two years after the normal anatomy of the stomach had been restored, perforation occurred again. The authors have carried out delayed gastrojejunostomy in fifty-six cases with one death, which was due to bronchopneumonia. The more obvious factors concerned in the mortality are the duration, the site, and the size of the perforation. They could not trace any relationship between the age of the patient and the prognosis. The older patients seem to do almost as well as the young. Among the 124 duodenal cases there were twenty-six deaths; among the thirty-four gastric cases there were twenty deaths. Of fifteen of the latter seven were due to shock of perforation and operation, and eight to general peritonitis and paralytic ileus. The immediate cause of death in the twenty-six duodenal cases was: general peritonitis and paralytic ileus, sixteen; shock of perforation and operation, three, and bronchopneumonia, seven. The subsequent history of the ninety-eight patients has been as follows: forty-one have remained in a satisfactory state without further operation; fifty-three have had posterior gastrojejunostomy, which was satisfactory in fifty-one; the other two developed jejunal ulcers and required further surgical measures. The subsequent history of the fourteen with gastric ulcer who recovered is as follows: Three have not required any further operative treatment; three have required posterior gastrojejunostomy, and two have required partial gastrectomy. The remaining six patients have died from various diseases not related to the original trouble.

**Internal Splinting for Fractures.**—Pascal advocates absolute fixation of bony fragments and splints in order to prevent any change in the bony tissue by means of the bronze sheaths devised by Contremoulins and Robineau. He cites instances of their use. The sheaths or sleeves for repairing fractures of bone grafts have given excellent results since 1921. In only three out of more than 100 cases thus treated have they had to be removed, and this was done easily. Many of the patients had compound fractures but this did not prevent sound consolidation. The sheaths are quite well tolerated and Pascal has never observed pseudarthrosis. The callus grows inside and outside the sleeve; on the femur extensive callus formation may be seen outside the sleeve. The big internal splinting devices have never yet had to be removed, though it is now more than five years since the first case was treated in this way.

## Medical J. of Australia, Sydney

**2:** 837-872 (Dec. 14) 1929

*Treatment of Acute Poliomyelitis by Means of Human Immune Serum. J. MacNamara.—p. 838.
*Activity of Stored Antipoliomyelitic Serum in Experimental Poliomyelitis. F. M. Burnet and J. MacNamara.—p. 851.

**Treatment of Acute Poliomyelitis by Means of Human Immune Serum.**—Administration of serum within twenty-four hours after paralysis has occurred in a febrile patient is justified, MacNamara says, and is usually followed by fall in temperature and arrest of the paralysis. If given later, when paralysis is stationary, serum is of no value. In the ascending group the administration is justified if stocks permit, but there is no guarantee that paralysis will be arrested.

**Activity of Stored Antipoliomyelitis Serum in Experimental Poliomyelitis.**—Burnet and MacNamara assert that human immune serum prepared by the technic adopted by the Commonwealth Serum Laboratories for the organization in Melbourne is effective in protecting monkeys against intracerebral inoculation of active poliomyelitic virus. This technic involves treatment with oxalate and filtration. No antiseptic is added. The virucidal qualities are retained for at least three years when the ampuled serum is stored at icebox temperature. No significant difference was detected between the virucidal properties of serums prepared from (1) persons recently convalescent and (2) persons affected three years previously. A method of therapy is therefore available which rests on a sound experimental basis.

## Journal of Oriental Medicine, Dairen

**11:** 141-148 (Nov.) 1929

*Pathologic Physiology Caused by Major Enterectomy: General Findings on Enterectomized Animals. S. Ishikawa.—p. 141.
Repeated Fecal Examinations of Japanese and Chinese Inpatients of Hospital, Manchuria Medical College: Results of Examination of Feces of Mongolians. S. Ishikawa.—p. 142.
Phagocytosis on Hemolytic and Nonhemolytic Streptococci. M. Ommyoji.—p. 144.
Phagocytosis of Human Blood on Typhoid Bacillus and Toxin of Typhoid Bacillus. S. Shibuya.—p. 145.
Virus of Typhus Fever. S. Hoshizaki.—p. 146.
The Blood Picture of Heatstroke and Sunstroke. Y. Takeuchi.—p. 148.

**Pathologic Physiology Caused by Major Enterectomy.**—Ishikawa has investigated the physiologic function, especially that causing disturbance in the metabolism of an animal enterectomized to the point of just maintaining life, with the view that it may contribute to a better understanding of the physiology of the intestines. As a first step, the author investigated the general results after the operation and prognosis, and he here reports the results briefly: A dog can stand an excision of more than half the small intestine, and, within a month or two, regain the same outward appearance as before the operation. An enterectomy of more than two thirds of the intestine causes the dog to die gradually, or even suddenly, without any particular pathogenesis which might incidentally lead to its

death. The prognosis is dangerous even in one showing encouraging progress. The excision of an entire intestine, exclusive of the duodenum, is critical, as it causes an insufficient supply of nutrition, and the dog dies sooner or later; however, the animal may live for a certain period (100 days being the maximum observed). There is no difference in the upper or lower enterectomy as it affects the animal's outward appearance. The observable symptoms after the operation are thirst, hunger and diarrhea. The greater the excision, the more obvious the symptoms. The compensatory mechanism after the operation is considered to be quite automatic: the increase in the time required for absorption by the remaining intestine, and the quantity of food taken appear to affect the mechanism greatly. In the postmortem of more than two thirds of the enterectomized animals, marked anemia and atrophy were observed.

## Archives Méd.-Chir. de l'App. Respiratoire, Paris

**4:** 297-387 (July) 1929

*Pseudocavernous Syndrome in Pleuropulmonary Sclerosis with Deviation of Trachea. E. Sergent and N. Stoichitza.—p. 297.
Thoracic Cold Abscess. E. Sorrel and Sayag-Dromer.—p. 314.
*Echinococcosis of Thoracic Wall. H. Costantini and R. M. Marill.—p. 331.
*Acute Primary Osteomyelitis of Ribs. A. Ameline.—p. 348.

**Pseudocavernous Syndrome in Pleuropulmonary Sclerosis with Deviation of Trachea.**—Sergent and Stoichitza discuss this occurrence on the basis of a review of the literature and their personal experience in twenty cases. They recall that either spontaneous or artificial symphysis of the pleura is one of the best methods for cicatricial cure of pulmonary tuberculosis and state that the pseudocavernous syndrome with deviation of the trachea is a result of this symphysis. It is more frequently (in 85 per cent of their patients) found in sclerosis of tuberculous origin. The left side was more often involved and the condition was likewise more often noted in women (in ten of seventeen patients). In twelve patients a complete symphysis of the pleura had occurred; in two others partial symphysis with a tendency to become entirely adherent was noted. Development of malformation of the thorax is indicative of the existence of the syndrome, but it is chiefly due to the increasing use of roentgen examinations that such conditions are now noted more and more frequently.

**Echinococcosis of Thoracic Wall.**—This comparatively rare occurrence is discussed by Costantini and Marill on the basis of a review of the literature. Characteristic of such *Echinococcus* infestation is the tendency of the *Echinococcus* to penetrate to the surface, thus causing secondary disorders. Such is the etiology of the hydatid pseudo-Pott's disease or of vertebrocostal echinococcosis. The authors point to the importance of roentgen examination for early diagnosis of the disease.

**Acute Primary Osteomyelitis of Ribs.**—On the basis of a review of the literature Ameline stresses the importance of the differential diagnosis of the disease from empyema. Surgical treatment with drainage and in severe cases resection of the focus of infection is indicated and should be associated with vaccinotherapy.

## Bulletins et Mém. de la Soc. Nat. de Chirurgie, Paris

**55:** 1209-1263 (Nov. 30) 1929

*Vulvovaginal Pruritus: Treatment. Mauclaire.—p. 1210.
*Congenital Hemolytic Jaundice: Splenectomy. L. Courty and A. Bernard.—p. 1211.
Chondroma of First Phalanx of Left Little Finger. H. Welti.—p. 1216.
Gelatinous Abdominal Effusion: I. Three Cases of Gelatinous Effusion into Abdominal Cavity in Women. F. Ferrari and C. Fergos.—p. 1218.
Id.: II. Subacute Appendicitis with Periappendicular Gelatinous Effusion in Man. A. Rives.—p. 1218.
Id.: III. Appendicitis with Gelatinous Effusion into Abdominal Cavity in Man. P. Villechaise.—p. 1218.
*Facial Neuralgia: Neurotomy of Sensory Roots (According to Dandy). D. Petit-Dutaillis and G. Loewy.—p. 1224.
*Perforating Ulcers of Stomach and Duodenum: Statistics of Two Hundred and Seven Cases. S. Judine.—p. 1233.
Cystostomy Followed by Severe Hematuria Caused by Benign Tumor of Prostate. Aumont.—p. 1243.

**Vulvovaginal Pruritus: Treatment.**—Mauclaire does not favor treatment by resection of the internal pudendal nerves because of the danger of injury to the nerve supply of the sphincter ani. In his patient, aged 34, the vulvovaginal pruritus developed following appendectomy and ablation of the left ovary and suspension of the uterus for a prolapse. Another laparotomy done five months later was not successful and two months after this intervention resection of the perineal branches of the internal pudendal nerves was done. The result was good. Vulvovaginal pruritus, however, is now treated either with local roentgen therapy or by roentgen irradiation of the sacral nerve roots. Actinotherapy and diathermy also are used. In spite of his successful surgical intervention Mauclaire advises operation only if all other therapy has failed.

**Congenital Hemolytic Jaundice: Splenectomy.**—Courty and Bernard's patient, aged 21, had had persistent abdominal pain coincident with jaundice and anemia. Treatment by various methods and forms of diets for fifteen months was without avail. Roentgen therapy only aggravated the condition. In spite of his poor general condition surgical intervention was decided on. On the day previous to the operation 300 cc. of blood was transfused. At operation there were no adhesions and the enlarged spleen was easily removed; it weighed 1,960 Gm. The abdomen was closed without drainage. Five hundred cubic centimeters of blood was transfused and the patient recovered rapidly from the shock in spite of a minor intercurrent infection. Three months later he appeared to have recovered and had no anemia or jaundice, though a slight leukocytosis was noted.

**Facial Neuralgia: Neurotomy of Sensory Roots (According to Dandy).**—On the basis of their personal experience in a patient with tic douloureux, Petit-Dutaillis and Loewy discuss the advantages of Dandy's technic as compared to Frazier's method of resection of the sensory root by the temporal route. The authors give preference to Dandy's mode of entry to the brain by the cerebellar route, which eliminates the danger of keratitis and preserves the ability for mastication on the side operated on. On the other hand, deafness has been known to occur and likewise hemorrhage from the temporal vein.

**Perforating Ulcers of Stomach and Duodenum.**—Judine's report covers 207 operations, 123 of which were done under spinal anesthesia. Suture of the ulcer and supplementary gastro-enterostomy were done 117 times. The mortality rate of 24.4 per cent appeared proportional to the time that had elapsed since the perforation. In thirty necropsies, multiple ulcers were seen seven times. Twenty-five patients recovered completely; in fifteen, dyspepsia continued and in eight, pain and vomiting persisted. However, within the last year Judine has applied splanchnic anesthesia and states that of sixty-two extensive resections only one ended fatally from an undetermined cause. Judine's report is discussed by Duval, who points to the substitution of splanchnic for spinal anesthesia and the favorable results obtained by resection of the ulcer in preference to gastro-enterostomy.

## Journal de Chirurgie, Paris

**34:** 571-736 (Nov.) 1929

*Exophthalmic Goiter: Subtotal Thyroidectomy in Treatment. L. Bérard and R. Peycelon.—p. 585.
Fractures of Joints: Surgical Treatment. J. M. Jorge.—p. 602.

**Exophthalmic Goiter: Subtotal Thyroidectomy in Treatment.**—Bérard and Peycelon are convinced of the value of surgical intervention in the treatment of hyperthyroidism that has persisted in spite of all other therapy. They describe their method of subtotal bilateral thyroidectomy, which they prefer to do in one stage. However, in subjects who for a protracted period have been suffering from a severe form of the disease, in whom loss of weight is marked and who react unfavorably toward medication, Kocher's method of removal of the thyroid is indicated. The authors point to the anatomic changes in other manifestations of hyperthyroidism besides typical exophthalmic goiter and agree with Roland that the interstitial tissue is responsible to a great extent for the toxic symptoms and that therefore extensive resection is essential.

## Lyon Chirurgical, Lyons

**26:** 641-766 (Sept.-Oct.) 1929

*Rupture of Aneurysm of the Splenic Artery. P. Bertrand and C. Clavel.—p. 641.
*Tuberculosis of Uterine Adnexa. F. Condamin.—p. 673.
Ligature of Arterial Arches in Hand. V. M. Popovici.—p. 686.

**Rupture of Aneurysm of the Splenic Artery.**—From a study of twenty-seven cases (including one personal case of P. Bertrand's) which they obtained from a review of the literature, Bertrand and Clavel state that rupture of the aneurysm occurs most frequently into the abdominal cavity. This condition was found in thirteen of the cases. In six other patients the rupture occurred in the stomach, and in four in the colon. Twice, it occurred simultaneously into the stomach and colon and likewise twice into the stomach and abdominal wall. In one instance the rupture occurred into the splenic vein. The spleen was found to be enlarged in twelve cases. The ruptures were of varied configuration, and their evolutive character was outstanding. Their etiology is obscure, but the occurrence of a rupture may be favored by weakness of the surrounding tissue due either to ulceration or to other destructive processes. Early diagnosis is difficult but exploratory laparotomy should be done in conditions of internal hemorrhage. A tamponade may for the time being save the life of the patient and be conducive to further therapy.

**Tuberculosis of Uterine Adnexa.**—On the basis of a review of the literature and his personal experience in sixteen typical cases (the detailed clinical reports of which were published in his thesis), Condamin points to the advantages of surgical treatment for such a condition. The extent of the intervention is dependent on the severity of the involvement. The author recognizes three definite groups, of which the first is serous salpingitis. Absorption is noted under the influence of exposure to air, and laparotomy with insertion of a drain may suffice. In patients not exhibiting complications and without caseous or other lesions, salpingectomy or sterilization is superfluous. The parenchymatous forms of tuberculosis are usually complicated by intestinal adhesions; in this case partial resection of the adnexa is necessary although sterilization may be avoided and the lesions likewise tend to disappear after the operation. It is only in the last group of caseous and suppurative tuberculosis that a radical operation is indicated.

## Paris Médical

**2:** 561-576 (Dec. 28) 1929

*Methemoglobin and Poisons Causing Its Formation. M. Duvoir and R. Goldberg.—p. 561.
Syphilis Without Chancre. F. Morel.—p. 566.
Recalcification with Calcium Chloride. L. Périn.—p. 575.

**Methemoglobin and Poisons Causing Its Formation.**—Duvoir and Goldberg discuss the symptoms of poisoning and review the methods for the recognition of methemoglobin. Poisoning by chemical agents causing its formation should be primarily treated with emetics and lavage of the stomach. Blood tests are likewise necessary to ensure administration of oxygen for combating the respiratory deficiency resulting from the formation of the pigment. Therapy with alkali compounds may be successful, but according to the authors bloodletting should not be done.

## Presse Médicale, Paris

**37:** 1621-1636 (Dec. 14) 1929

Inflammation: Historical Review. G. Roussy, R. Leroux and C. Oberling.—p. 1621.
*Is Anthracosis a Disease? E. Arnould.—p. 1624.
*Abdominal Aortitis. L. Ramond.—p. 1631.

**Is Anthracosis a Disease?**—On the basis of a review of the literature, Arnould concludes that anthracosis is a type of pneumonoconiosis. This condition was found at necropsy in a great number of coal miners who were healthy during life, although the many years spent in the mines had led to dyspnea and an emphysematous condition. According to Arnould, the only rôle ascribable to coal dust in the lung is that of inert matter which becomes cumbersome if its accumulation is too great and may then lead to a mechanical disturbance of respiration.

**Abdominal Aortitis.**—Ramond reports the clinical history of a woman, aged 80, who had been suffering for one and one-half years from seizures of abdominal and thoracic pain lasting from one-half to one-fourth hours and often ending with vomiting or regurgitations of bitter tasting gastric juice. Although the onset was spontaneous, it appeared most frequently after meals. Her previous history disclosed that she had had gastric pains ever since she was 20 years old. Seven years before seizures of intense retrosternal pain and a condition of anxiety had occurred, and one year later a local spastic condition had developed in her fingers, with pain in the arm. Two years later intermittent claudication of the legs was noted which disappeared within two years. Examination showed that a chronic condition of arteritis persisted and that the abdominal aorta was dilated and elongated. The general condition, however, was good and no pathologic changes could be noted otherwise. Ramond concludes that the aortitis may be linked to the atheroma of the aorta, which caused the seizures of epigastric pain having the character of angina pectoris.

**37:** 1653-1668 (Dec. 21) 1929

*Venous Stasis in Lung. C. Laubry, R. Chaperon and Séjourné.—p. 1653.
Relation Between Psychiatry and Surgery. W. S. Bainbridge.—p. 1657.

**Venous Stasis in Lung.**—From roentgen examinations of the pulmonary circulation Laubry et al. conclude that the configuration and size of the hilus shadow may be taken as a guide in treatment. Mitral stenosis is often responsible for the occurrence of venous stasis or other cardiac disorders which may necessitate an interruption of pregnancy. Normally, in roentgenography of the chest, the pulmonary arteries are distinct and easy to outline, the bronchial visibility is clear and there are no additional shadows around the hilus. The syndrome of venous stasis presents a picture with indistinct contours and an irregular structure caused by a network of smaller vessels. A distention of the left auricle is noted coexistant with an abnormal visibility of the branches of the right bronchus and a diminution of transparency in the adjacent parts of the lungs. The authors discuss the treatment of this condition and favor respiration exercises, according to the method of Pescher, with a spiroscope. Contraindications to such therapy are the presence of pericarditis or marked insufficiency of the left ventricle. Although the treatment may be given if the insufficiency of the left ventricle is not marked, in insufficiency of the right ventricle, in hypertension and in cardiac symphysis one should refrain from giving such exercises.

**37:** 1669-1684 (Dec. 25) 1929

*Septicemia Due to "Bacillus Fragilis." A. Lemierre, A. Gay and M. Rudolf.—p. 1669.
Acute Appendicitis: Diagnosis and Treatment. G. Métivet.—p. 1672.
Embolectomy of Pulmonary Artery. J. Sénèque.—p. 1673.

**Septicemia Due to "Bacillus Fragilis."**—Lemierre et al. report the clinical history of a man, aged 44, in whom a culture of the blood showed a septicemia caused by an anaerobe bacillus without spores and showing poor growth which may be named *Bacillus fragilis*. One week previous to his admission at the clinic the patient had had a severe sore throat with dysphagia. After three days the symptoms subsided, although a high temperature persisted. Hematuria was noted and a painful swelling formed on the chest. On incision, pus containing *Bacillus fragilis* in pure culture was withdrawn. The organisms were also found in cultures of the blood. His condition did not improve, however, and four weeks later surgical intervention under local anesthesia disclosed an osteitis of the sternum below the site of the abscess. After removal of the involved bone and the insertion of a drain, his condition rapidly improved. The patient was discharged from the hospital ten days later. The authors point to the importance of control of the blood by aerobic and anaerobic cultures and the value of surgical intervention.

## Schweizerische medizinische Wochenschrift, Basel

**59:** 1405-1428 (Dec. 28) 1929

Psychologic Factors and Outer Circumstances Leading to Murder: Case. A. Grossmann.—p. 1405.
*Thrombosis of Superior Vena Cava Following Influenza: Death After Ten Years. A. Strauss.—p. 1410.
Blunt Injuries of Abdomen Treated in Surgical Division of Hospital in Aaran in the Years 1908-1927. H. Wyss.—p. 1412. C'cn.
Clinical Considerations on Stimulation of Vagus Nerve in Man. C. Cornioley.—p. 1418.
Calcium Therapy in Allergic Diseases. K. E. Boehncke.—p. 1421.

**Thrombosis of Superior Vena Cava Following Influenza: Death After Ten Years.**—Strauss reports the case of a man, aged 24, who after an attack of influenza in 1918 developed a thrombosis of the superior vena cava. Gradually the signs of congestion disappeared and for several years the patient's general condition was fair. In January, 1929, the

patient entered the clinic again on account of severe pains in the right epigastrium. Symptoms of congestion similar to those during the first attack again became manifest. Several weeks later the patient died. The necropsy revealed suppurative fibrinous peritonitis, originating in a chronic ulcerative appendicitis; also slight chronic swelling and hyperemia of the spleen, and hyperplasia of the bone marrow. The pathogenesis of the appendicitis could not be determined. The postmortem examination also revealed an obliteration of the superior vena cava and its branches. However, a collateral circulation had formed, and this circulation evidently had been adequate, as long as the organism was free from other diseases. The author points out that thrombosis occasionally develops after influenza. In this instance, however, it was more extensive than usual.

## Clinica Pediatrica, Modena

**11:** 1105-1206 (Dec.) 1929

Erythrocytometric Formula at Birth and in First Week of Life. A. Lucca.—p. 1105.
Hematologic Observations in Pertussis. A. G. Paolucci.—p. 1127.
*New Pathogenic Conception of Pulmonary Tuberculosis. A. Campani.—p. 1141.
Variations of Amino-Acids of Blood in Children Sensitized with Heterogenic Blood Serum. D. Larini.—p. 1147.
*Cattaneo's Sign in Tracheobronchial Adenopathy. G. Carbonara.—p. 1164.

**New Pathogenic Conception of Pulmonary Tuberculosis.**—Campani has observed in patients with pulmonary tuberculosis who present traces of cutaneous scars due to favus, anthrax, furuncles and various suppurations, some of them very old, on the head, neck and arms, that the primary pulmonary lesion clinically coincides in 83 per cent of the cases with the side on which the cutaneous scars appear. These patients nearly always present apical lesions, fully devoloped or in the incipient stage. As a rule, these are types with a slow, benign, fibrous development. It is rare to find marked scars associated with rapidly developing types. The author discusses various possible interpretations of the phenomena. One suggestion is that the septic lesions of the skin of the upper part of the body may in certain cases (not so rare) be due to the obscure entrance of the tubercle bacillus itself. The author noted also that the aforementioned patients generally lived or had lived in contact with tuberculous persons, not only relatives but also nonrelatives, which made such a mode of infection the more plausible. Children with crusts of eczema might easily in an infected environment, by scratching excoriations with infected hands, introduce tubercle bacilli. The author regards such passage through tissues pathologically prepared by other organisms as constituting something quite different from simple, mechanical introduction by physiologic routes, such as respiration and normal digestion.

**Cattaneo's Sign in Tracheobronchial Adenopathy.**—Carbonara has found on investigation that Cattaneo's sign is a symptom worthy to be included in the semeiology of tracheobronchial adenopathy, which in recent years has been assuming increasing importance and which is often difficult to diagnose, as has been shown by Comby in a recent article. There are, to be sure, a few cases in which the sign is present though the subject is exempt, but only in rare cases (one in a hundred, when the subject is very anemic, Cattaneo says) is the sign lacking. The sign was elicited in the following manner: Cattaneo, on applying percussion with some force to the spinous processes of the dorsal vertebrae, after from five to thirty seconds saw reddish spots appear directly over the processes. The spots disappeared rapidly but reappeared at each percussion. Cattaneo discovered that the spots appear over vertebrae that have a defective tone and are lacking over vertebrae with a normal tone. They appear only in the tuberculous children. Cattaneo interprets the sign as a local vasomotor disturbance associated with the increased size of the underlying glands. Guido De Simone, in a capillaroscopic examination of the zone of reddening, found a highly colored substratum, subpapillary vessels markedly dilated and many dilated capillaries.

## Giornale di Clinica Medica, Parma

**10:** 1137-1198 (Dec. 10) 1929

*Genesis of Cutaneous Pigmentation. N. Lovisatti.—p. 1137.
*Abortive Types of Thrombopenia. F. Serio.—p. 1149.
Urinary Infection from Indologenous Bacillus Capsulatus. M. Groppali.—p. 1161.

**Genesis of Cutaneous Pigmentation.**—Lovisatti reviews the theories on the genesis of melanotic cutaneous pigmentation and considers the various physical, chemical and functional causes of pigmentation. He regards the melanotic pigment as an elaboration of the skin designed to arrest solar radiations and thinks that the various causes of hyperpigmentation may be combined by a common factor consisting in a dilatation of the cutaneous vessels. These vascular modifications facilitate the deposition of the propigment in the basal cells in which oxydasis occurs.

**Abortive Types of Thrombopenia.**—Serio points out the disagreement, frequently noted in the matter of purpura, between the clinical symptomatology and the hematology. He reports two cases in which associated with a frank picture of purpura hemorrhagica was a slight reduction in the number of platelets, which ranged between 85 and 130 thousand, and one case in which the thrombopenia was more marked (50 thousand) without any manifest sign of purpura.

## Pediatria, Naples

**37:** 1279-1334 (Dec. 1) 1929

*Beef Liver Treatment in Grave Anemias of Infants. B. Vasile.—p. 1279.
Normal Cholecystographic Observations in Children. G. M. Reviglio.—p. 1301.
Pernicious Anemia: Case. F. de Capua.—p. 1313.
Causes of Nasal Obstruction in Infants. E. di Lauro.—p. 1320.

**Liver Treatment in Grave Anemias of Infants.**—Vasile concludes that the administration of beef liver in certain grave anemias of infants (other than pernicious anemia) may be employed with the best results. In one case of pseudo-aplastic anemia and in two cases of splenomegalic anemia the blood condition returned to normal after about two months' treatment. The results were absolutely negative in four cases of pseudoleukemic anemia (Jaksch-Hayem). The latter disease, from the characteristics of the blood picture, must be considered (at least in certain cases) as an erythroleukemic myelosis.

**37:** 1335-1361 (Dec. 15) 1929

*Amylolytic Power of Blood and Urine of Infants with Disorders of Stomach. F. Morabito.—p. 1335.
*Pernicious Anemia of Biermer's Type in Infant: Liver Diet. M. Gerbasi.—p. 1343.
*Persistent Vomiting in Infants: Treatment with a Rennet Preparation. C. Catteruccia.—p. 1350.

**Amylolytic Power of Blood and Urine in Infants with Disorders of Stomach.**—Morabito reviews the literature and says that the amylolytic power of the blood serum and the urine of persons with various diseases, though marked in adults, is slight in children. He determined the diastase content of the blood serum and urine in thirty children aged from 5 months to 2 years. Twenty of the children had various disorders of the stomach (food intoxication, dystrophy, either by itself or complicating some septic conditions, and chronic indigestion) and the remainder were normal children used as controls. The test used in the quantitative determination of diastase in the blood serum and in the urine was a modification of Wohlgemuth's and Bettoni's tests. For the test the following items were used: 2 or 3 cc. of urine or of blood serum, a 1:1,000 solution of soluble starch, a 1 per cent solution of sodium chloride and a decinormal solution of iodine. The starch should be dissolved previously in hot distilled water which does not come to the boiling point. The author describes the technic of the test. The amount of ferment contained in 1 cc. of nondiluted blood serum or urine which may cause a digestive reaction of 2 cc. of a 1:1,000 solution of soluble starch at 38 C. during a half hour represents the diastasic unit for the estimation of diastase in blood serum and in urine. On the basis of the results of his quantitative estimation, the author concludes that in normal infants, the diastase content of the blood varies from 5 to 10 diastasic units and of the urine, from 8 to 26 diastasic units. As is the case in normal adults, in normal infants the diastase content varies greatly, both in the blood and in the urine, and the diastasic content of the blood is lower than that of the urine. In infants with dystrophy, associated with septic

conditions, in those with food intoxications and in those with chronic indigestion, the diastase content both of the blood and of the urine is decreased. In infants with uncomplicated dystrophy, the diastase content of the blood and urine is generally normal.

**Pernicious Anemia of Biermer's Type in Infant: Liver Diet.**—Gerbasi reports the case of a child, aged 11 months, in whom heredosyphilis was the etiologic factor of pernicious anemia of a regenerative type. A liver diet gave excellent results.

**Treatment of Persistent Vomiting in Infants.**—Catteruccia obtained good results in the treatment of persistent vomiting by the administration of rennet to fourteen breast-fed infants, aged from 20 days to 4 months, in whom other treatments failed. Before the administration of the ferment the disturbances caused by hyperalimentation or hypo-alimentation were eliminated by regulating the nursing. The author used a commercial preparation of rennet, made in tablets at a concentration of 1 : 10,000, obtained from the stomach of calves. Each of these tablets of ferment coagulated 100 cc. of cow's milk. He gave to the infants one tablet dissolved in 20 or 30 cc. of boiled water, half of this solution immediately before and the other half immediately after nursings. Sometimes he gave the entire quantity at once before nursing and in some cases he used two tablets dissolved in the same quantity of water, given at once before nursing, without having observed symptoms of intolerance. The treatment gave good results in all but two cases. In the remainder vomiting stopped either from the first administration of rennet or in about one week. In two cases the vomiting reappeared. The administration of rennet was temporarily discontinued, and atropine, either by itself or with sodium citrate, was given for some days and then the rennet preparation was given again. One of the infants had heredosyphilis and his vomiting also stopped with rennet treatment.

## Policlinico, Rome

**36:** 1821-1860 (Dec. 16) 1929. Practical Section

Diagnostic Importance of Examination of Cerebrospinal Fluid. D. Pisani.—p. 1825.
*Strangulated Tubo-Ovarian Hernia in Six Months Old Child. L. Allegri.—p. 1832.
*Diverticular Umbilical Hernia in Fetus. V. Jura.—p. 1833.

**Strangulated Tubo-Ovarian Hernia in Six Months Old Child.**—Allegri suggests the desirability of keeping in mind, in dealing with infants, the possibility of this particular type of tubo-ovarian hernia with torsion of the pedicle, since a timely surgical operation will lead to a rapid recovery. The author discusses the symptomatology and the difficulties of diagnosis.

**Diverticular Umbilical Hernia in Fetus.**—Jura describes a case of diverticular hernia in which he operated on the new-born child twelve hours after birth. Meckel's diverticulum was connected with the umbilicus by fibrous bands that represented residua of the omphalomesenteric duct. The operator removed the tract of the aplastic abdominal wall and the diverticulum, burying the stump in the small intestine. The child recovered and is in good health; perfect canalization of the intestine has been demonstrated roentgenologically. The author reviews the pathogenic conceptions of the disorder and discusses the outcome of such operations in the new-born, in whom the interventions have a grave prognosis because of the frequency of postoperative complications, especially in infants only a few days old.

## Semana Médica, Buenos Aires

**36:** 1301-1380 (Nov. 7) 1929

Stupor a Parkinsonian Syndrome: Seven Cases. J. M. Obarrio.—p. 1301.
*Immunization Treatment of Scarlet Fever. R. E. Torviso.—p. 1329.
Correct Denomination of Initial Ventricular Complex According to Simultaneous Record of Two Leads. T. Padilla and P. Cossio, Jr.—p. 1331.
Clinic for Heredosyphilitic Children in Argentina. J. P. Garrahan and J. J. Murtagh.—p. 1341.
*Diagnostic Value of Puncture in Extra-Uterine Pregnancy. D. E. Caravias.—p. 1345.
Arthroplasty of Interphalangeal Joint for Correction of Hammer Finger. J. A. Caeiro.—p. 1346.
Pathogenesis and Therapeutics in Oculogyric Crisis: Three Cases. E. Adrogué and M. Balado.—p. 1348.
*Use of Amyl Nitrite in Accidents Caused by Local Anesthesia: Case. M. Loubière.—p. 1351.
Rupture of Cruciate Ligaments of Knee Joint: Reconstructive Treatment. I. Prini and R. C. Ferrari.—p. 1352.
*Unsatisfactory Late Results of Gastro-Enterostomy in Treatment of Gastroduodenal Ulcers. R. Solé.—p. 1367.
Tuberculous Arthritis of Knee: Lavalle's Operation. L. M. Lamy.—p. 1369.

**Immunization Treatment of Scarlet Fever.**—Torviso reports four cases of scarlet fever in adults, besides twenty-five cases in children which he reported previously. In the last four cases cultures made from the throat of the patients contained hemolytic streptococci. The author treated all these patients by daily injections of a mixed streptococcus and pneumococcus vaccine; digitalis was given as a cardiac tonic and a solution of dextrose and sodium hyposulphite was given intravenously in persons whose erythrocyte sedimentation was higher than 60. The author states that under this treatment the disease lasted from five to eight days; the angina and the exudate disappeared after the second or the third injection; the fever decreased in about thirty-six hours; desquamation occurred early, and no renal sequels were observed. He asserts that this treatment gave better results than the use of scarlet fever serum.

**Diagnostic Value of Puncture in Extra-Uterine Pregnancy.**—Caravías' patient, aged 30, presented a serious condition. The differential diagnosis of pelviperitonitis or ruptured extra-uterine pregnancy was difficult. Puncture through the vaginal culdesac yielded "old blood" and led to the diagnosis of a ruptured extra-uterine pregnancy. An infra-umbilical laparotomy was performed and a mass of clots, with all the manifestations of a ruptured tubal pregnancy, was found in the right tube. The tube was resected. The patient did well. The author says that this case confirms the diagnostic value of puncture in extra-uterine pregnancy.

**Use of Amyl Nitrite in Accidents Caused by Local Anesthesia.**—In accidents of vasoconstriction caused by local anesthesia, when there are no contraindications (a congestive or atheromatous constitution of the patient), Loubière advises the inhalation of amyl nitrite, which has a more rapid action than acetylcholine hydrochloride. The author reports an experience of his own in a patient in whom an operation on a stump of a finger was to be performed. A local anesthetic solution containing epinephrine was used. Immediately after the production of perfect anesthesia, a sudden vasoconstriction of the finger was noted. No blood appeared on incision. The introduction of the hand into hot water did not restore the circulation. The inhalation of an ampule of amyl nitrite and pouring the contents of another ampule on the finger gave good results. Perfect healing was obtained.

**Unsatisfactory Late Results of Gastro-Enterostomy in Treatment of Gastroduodenal Ulcers.**—Solé says that in the treatment of gastroduodenal ulcers, gastrectomy should be the operation of choice. Gastro-enterostomy produces unsatisfactory late results in at least 35 per cent of the cases. The author reports three cases in which gastro-enterostomy produced good immediate results but very unsatisfactory results after two or three years. Postmortem examination of one of the patients showed two postoperative complications: a recurrence of the ulcer and a gastrojejunal peptic ulcer. The author believes that in these three patients, the performance of gastrectomy instead of gastro-enterostomy would have saved the patients.

**36:** 1381-1456 (Nov. 14) 1929

Diagnosis and Treatment of Hemoptysis. C. Fonso Gandolfo.—p. 1381.
*Resection of Antrum Pyloricum in Surgical Treatment of Nonresectable Ulcer of Duodenum. A. Ceballos.—p. 1419.
Intrapericardial Aneurysm of Aorta. T. Martini, M. Joselevich and A. E. Bianchi.—p. 1423.
*Treatment of Syphilis with Soluble Quinine Bismuth Iodide: Intramuscular Injections. E. P. Fidanza.—p. 1430.
Fracture of Surgical Neck of Scapula Associated with Fracture of Surgical Neck of Humerus with Dislocation of Head of Humerus. T. Gioia.—p. 1434.
Thyroidectomy in a Case of Toxic Goiter Complicating Pregnancy. A. J. Bengolea and J. Bazán.—p. 1438.
*Aortitis in Three Heredosyphilitic Brothers: Good Results of Antisyphilitic Treatment. V. H. Locatelli.—p. 1439.

**Resection of Antrum Pyloricum in Surgical Treatment of Nonresectable Ulcer of Duodenum.**—In the treatment of operable ulcers of the stomach and of the duodenum, Ceballos advises resection of the ulcer; in ulcers that cannot be resected, he advises gastro-enterostomy. In cases, however, in which neither resection nor gastro-enterostomy is advisable, that is, when the infiltration invades the entire duodenal circumference, or in cases in which the ulcer is located in the second portion of the duodenum, on its posterior wall, the author advises resection of the antrum pyloricum. The principal indication for this type of operation is bleeding duodenal ulcers, and the results, both immediate and late, are satisfactory. The author reports a case in a man, aged 21, with an infiltrating ulcer of the second portion of the duodenum, in whom the resection of the antrum pyloricum was successfully performed. One year and a half later the patient was still in good condition, in spite of overindulgence in wine and food.

**Treatment of Syphilis with Soluble Quinine Bismuth Iodide.**—Fidanza has obtained good results in the treatment of primary and secondary syphilis by intramuscular injections of a proprietary preparation of quinine bismuth iodide, dissolved in water. The injection is given every other day and does not cause inflammatory or local reactions; it is painless and well tolerated. The author asserts that the intramuscular injection of this solution has a more rapid action than the oily or organosynthetic suspensions. In cases of greatly infiltrated chancre, he observed the disappearance of the spirochetes as early as the second day after the injection, and healing of the chancre resulted as early as ten days after the injections were begun.

**Aortitis in Three Heredosyphilitic Brothers: Good Results of Antisyphilitic Treatment.**—Locatelli believes that the occurrence of aortitis in several members of the same family indicates the presence of congenital syphilis. He reports the case of two brothers, aged 27 and 23, with crises of angina pectoris, hypertensive crises, retrosternal pain and all the symptoms of aortitis. Roentgenoscopy confirmed the diagnosis of aortitis. In the history of the two patients, it was found that an older brother, aged 30, had died about two years before of confirmed aortitis. Antisyphilitic treatment gave good results in both patients. Roentgenoscopy showed that the pathologic condition was slowly disappearing and that the patients were gradually recovering.

## Deutsche medizinische Wochenschrift, Berlin

**55:** 2167-2186 (Dec. 27) 1929

Diagnosis and Treatment of Diseases of Bile Passages in Liver. Umber.—p. 2167.
Investigations on Female Sex Hormone: Demonstration and Characteristics of Crystallized Hormone. A. Butenandt.—p. 2171.
Vaccination Against Tuberculosis in Cattle. A. Calmette and C. Guérin.—p. 2173.
Idem. P. Uhlenhuth.—p. 2175.
*Gonin's Operation in Detachment of Retina. J. Igersheimer.—p. 2177.

**Gonin's Operation in Detachment of Retina.**—Igersheimer describes a therapeutic method for cases of detachment of the retina, which has been employed by Gonin during the last five or six years. The author likewise employed this method. He gives a detailed report of three cases in which the operation brought favorable results. The new aspect of Gonin's method is that the fissure formation is considered the main factor in the pathogenesis and in the treatment of spontaneous ablatio retinae. It is sometimes extremely difficult and tedious to locate the fissures, although this is possible in the majority of cases. The essential part of the operation is that in the fissure a posterior sclerotomy is performed and through the scleral opening cauterization is done deep into the vitreous body. Indications and contraindications to this treatment are as yet not definitely defined, but it is certain that the results are more favorable if the operation is performed early. It is possible that in the future the technic of Gonin's operation will be somewhat modified. However, it can be stated that in its present form it already represents a marked advance over the older methods. The description of the three cases illustrates the practical value of the operation.

## Jahrbuch für Kinderheilkunde, Berlin

**125:** 253-378 (Nov.) 1929

*Postvaccinal Encephalitis. W. Keller and W. Schaefer.—p. 253.
Electrical Irritability in Premature Infants. H. Rothe,—p. 285.
*Disturbances in Infants on Flour Diet. R. Hamburger and M. Boddin.—p. 300.
*Nature of Varicellation. G. Fedders.—p. 308.
Demonstration of Diphtheria Toxin in Blood Serum in Diphtheria. E. Neumann.—p. 311.
Acute Dyspepsia in Nurslings: Pathogenesis. E. J. Bermann.—p. 339.

**Postvaccinal Encephalitis: Etiology.**—From a review of the literature and from experiments on rabbits, Keller and Schaefer conclude that postvaccinal encephalitis is not a form of epidemic encephalitis or of any other known encephalitic process. They believe that it is caused either by the activation of a hitherto unknown organism or by a nonpathogenic organism in which the disease-producing noxae are formed only in the presence of the vaccinal allergy.

**Disturbances in Infants on Flour Diet: Treatment.**—In the treatment of nutritional disturbances in infants on a flour diet Hamburger and Boddin have obtained good results with yeast. They use either fresh yeast or yeast preparations. The marked cathartic action of even dry preparations of yeast can usually be avoided by giving only small doses (0.1 Gm. once or several times a day). The authors have obtained good results also with the yolks of eggs and with liver and liver broth. They do not recommend any of the fruit juices, however, because of their cathartic action.

**Nature of Varicellation.**—On the basis of his observations in twenty-five cases of varicellation in children, Fedders concludes that cutaneous varicellation is a form of infection with chickenpox in which the reaction of the organism limits the eruption to the site of vaccination. In rare cases in which immunity does not develop, the process becomes generalized. Cutaneous infection is therefore a form of preventive vaccination and gives good results when used during the first half of the incubation period of the natural infection. Its value is lessened by the fact that the persons vaccinated are infectious.

## Klinische Wochenschrift, Berlin

**8:** 2409-2440 (Dec. 24) 1929

Economic Aspects of Changes in Nutrition. H. von Hoesslin.—p. 2409.
*Apple Diet for Treatment of Diarrheal Conditions in Children. E. Moro.—p. 2414.
Investigations of Occurrence of Erythrocontes in Erythrocytes of Patients with Pernicious Anemia. V. Schilling.—p. 2417.
Pathologic ("Toxic") Granulation of Finely Granular Leukocytes: Its Demonstration and Clinical Significance. H. Mommsen.—p. 2420.
*Histolytic Effect of Radium Irradiation on Cancer Tissues. J. Flaszen and H. Wachtel.—p. 2422.
Observations on Patients with Cystinuria. M. Altmann.—p. 2426.
*Pericardial Fluid for Determination of Blood Group in Cadavers. F. J. Holzer.—p. 2427.
Changes in Potassium and Calcium Content of Cerebrospinal Fluid, Following Injection of Hormone of Parathyroid. G. Berencsy.—p. 2428.

**Apple Diet for Treatment of Diarrheal Conditions in Children.**—Moro describes an apple diet which he successfully applied in the treatment of diarrheal conditions in children. The method of treatment is as follows: Only completely ripe and mellow apples should be used. After the fruit has been peeled and cored, it is gratèd on a glass grater. Of this pulp the child receives, according to his age, from 500 to 1,500 Gm. daily, that is, from 100 to 300 Gm. at each feeding. For two days only apple pulp should be eaten. It supplies the necessary food as well as the fluid. In an exceptional case, when the child becomes thirsty during the night, some tea may be given. It is advisable to follow the two days of an exclusive apple diet by two days of a transitional diet which contains neither milk nor vegetables. After that the patient may again be put on a mixed diet. The author employed this treatment in fifty-two children; twenty-two had acute dyspepsia, fifteen had dysentery, one had typhoid, eight had chronic dyspepsia and the remainder had either mucous enteritis or chronic insufficiency of the digestive organs. The ages of the children varied between 1 and 10 years. Several infants were likewise subjected to the apple diet. The results were nearly the same as

in older children. However, the author does not recommend the apple diet for nurslings. In the majority of the children who received the apple diet, the diarrhea stopped immediately, and on the first or second day the stools were formed. Relapses occurred rarely. The author thinks that the efficacy of this treatment is due to the fact that the apple pulp provides a filling for the intestine which is not irritative, and which tranquilizes the motor apparatus of the intestine. This effect of the apple pulp is probably due to its content of tannic acid. The passage of the pulpy mass through the intestine not only effects a mechanical purification but also acts as an absorbent.

**Histolytic Effect of Radium Irradiation on Cancer Tissues.**—Flaszen and Wachtel assert that the early reaction in cancerous growths following radium irradiation is caused by the histolytic action of the hard, filtered and secondary beta rays of platinum-filtered radium. This early reaction may result in a partial or a complete cure. The histolytic action effected by the beta rays is analogous to the reactivation of the cytolysis of cancer cells in vitro: It is a chemical rearrangement of the substances that protect the cancer cells. The authors point out that the platinum-filtered beta rays of radium have not been sufficiently exploited in the past. They assert that their practical utilization will bring better results and also shorten the duration of the treatment.

**Pericardial Fluid for Determination of Blood Group in Cadavers.**—Holzer points out that the determination of the blood group in cadavers is frequently difficult because the plasma of the blood is not sufficiently clear to permit demonstration of the agglutinins. It is known that the agglutinins may also be found in other body fluids. In cadavers the pericardial fluid remains free from blood pigments and from putrefactive bacteria longer than other fluids; consequently it was considered the best material for the determination of the blood groups of cadavers. The technic of the test is described. The author states that this method was employed in a large number of corpses, and it proved particularly valuable in determining the blood group of cadavers of infants and of fetuses.

## Medizinische Klinik, Berlin

**25:** 1919-1956 (Dec. 13) 1929

Clinical Aspects and Pathogenesis of Various Forms of Pneumonoconiosis. M. Sternberg.—p. 1919.
Diagnosis of Inflammation of Pelvic Connective Tissue. Benthin.—p. 1923.
*A Peculiar, Probably Herpetiform Disease. K. Mendel.—p. 1925.
Ray Therapy in Ophthalmology. G. Braun.—p. 1926.
*Hyperemia by Means of Diathermy for Treatment of Chronic Cerebral and Spinal Disturbances. F. Kraus.—p. 1929.
Thrombophlebitis Paratyphosa B. B. Gunnlaugsson.—p. 1932.
Rapid Hemolytic Reaction with Active Serum for Diagnosis of Syphilis. E. Kadisch.—p. 1933.
Physiologic and Pathologic Forms of Hemoglobin and Its Derivatives. F. Haurowitz.—p. 1935. C'cn.
New Instruments for Tying Sutures and Ligatures in Inaccessible Regions. M. Misch.—p. 1939.
Efficacy and Limitations of Conservative Treatment of Inflammatory Diseases of Middle Ear. W. Klestadt.—p. 1957.
Hormonal Substance in Central Nervous System. L. Haberlandt.—p. 1961.
Results of Investigations on Source of Infection in Venereal Diseases. C. F. Funk.—p. 1964.
*Serum Therapy in Lobar Pneumonia. H. Lichtenstein.—p. 1966.
Pregnancy and Labor in Women with Heart Disease. B. Tunis.—p. 1969. C'td.
Filtrable Form of Tuberculosis Virus. O. Felsenfeld.—p. 1973.
Balneologic Practice: Constant Irradiation by Means of Compresses Containing Minute Quantities of Radium. Salz.—p. 1975.

**Peculiar, Probably Herpetiform Disease.** — Mendel reports six cases of a peculiar disease that came under his observation in a period of four weeks. He asserts that in thirty years of practice cases of this type had not been observed by him. The disturbance was characterized by intense pains in the leg or in the thigh. The attacks usually occurred during the night. On examination no objective symptoms could be detected and motor disturbances were likewise absent. Application of warmth made the pains more severe, whereas movement and pressure alleviated them somewhat. Medicaments were without effect. The disturbance generally lasted from one to several weeks. After that it disappeared again. The author considers the disturbance an herpetiform disease without vesicular eruptions that is, an inflammatory infectious process either in the spinal ganglion or in its vicinity, possibly in the posterior root.

**Hyperemia by Means of Diathermy for Treatment of Chronic Cerebral and Spinal Disturbances.**—Kraus points out that diathermy produces hyperemia and by this increases functional activity not only in organs such as the liver and kidney and in cardiac muscle but also in the spinal cord and the cerebrum. He found that sagittal diathermy of the head stimulates the function of the diuretic center in the thalamencephalon and by this increases diuresis. The diuresis is most pronounced twenty-four hours after the treatment. It was noted that too frequent stimulation of the cerebrum has an exhausting effect, and it is therefore advisable to repeat the treatments only after longer intervals. The hyperemia that is produced by diathermy of the thalamencephalon influences the course of chronic epidemic encephalitis, of parkinsonism and of chorea minor. If this therapeutic method is employed correctly, it involves no danger, and it is applicable in patients of all ages. Most persons found hyperemia by means of diathermy agreeable.

**Serum Therapy of Lobar Pneumonia.** — Lichtenstein employed serum therapy in the treatment of twenty-three patients with lobar pneumonia. He found that so-called polyvalent pneumococcus serum, which was prepared with types 1 and 2 pneumococci, exerted a certain influence in some cases, whereas in others it was not effective. In those cases that were affected by the serum therapy, the temperature decreased, the pulse became more regular and the general condition improved. However, the pneumonia itself was not affected. Animal experiments, as well as the clinical experiences of other authorities, indicate that serum which is prepared with type 1 pneumococci should be effective in pneumonia of that type. It was therefore surprising that the best results were obtained in pneumonia caused by type 4 pneumococci. From this observation the author concludes that the polyvalent serum is not type specific, but that the reactions are due to the action of the protein bodies. He stresses the point that the nonspecific action of the protein bodies is characteristic only for the polyvalent pneumococcus serum. Monovalent serums had not been employed in these cases.

**25:** 1995-2010 (Dec. 27) 1929

Roentgen Diagnosis in Diseases of Gallbladder. H. Friedrich.—p. 1995.
*Aorta-Spleen Syndrome in Diagnosis of Syphilis. R. Korbsch.—p. 1998.
Pregnancy and Labor in Women with Heart Disease. B. Tunis.—p. 1999. C'cn.
Pathogenicity of Lamblia Intestinalis. H. Scheidel.—p. 2001.
*Treatment of Varicose Veins by Means of Diathermy Coagulation. O. Merdinger.—p. 2003.
Apparent Changes in Blood Group Caused by Imperfect Technic. R. Lauter.—p. 2003.

**Aorta-Spleen Syndrome in Diagnosis of Syphilis.**—Careful observations during the last eight years have convinced Korbsch that changes in the aorta and an enlargement of the spleen are significant factors in the diagnosis of late syphilis. Because these two symptoms generally concur, the author designates them as the aorta-spleen syndrome. These conditions may be detected by physical as well as by roentgen examination. The changes in the aorta are those characteristic of syphilitic aortitis. The enlargement of the spleen is usually not palpable as a tumor, but percussion reveals a larger area of dulness. During roentgenoscopy the spleen appears pear shaped, the enlargement being mostly at the lower pole. What makes the aorta-spleen syndrome particularly valuable is the fact that in late syphilis it occurs more regularly than a positive serologic reaction. The author describes one case that clearly illustrates the practical significance of this syndrome.

**Treatment of Varicose Veins by Means of Diathermy Coagulation.**—Merdinger treated eighteen patients with varicose veins by means of diathermy coagulation. He describes the technic of this treatment. The effects were not always entirely satisfactory. However, the author hopes that an improved technic will give better results. He considers diathermy of varicose veins superior to injection therapy because it is more agreeable for the patients, complications are avoided and the permanent results are more favorable.

## Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

**83:** 247-378 (Nov.) 1929

Childbirth in Maternity Hospitals: Results for Mother and Child. S. Gideon.—p. 251.
Bacterial Content of Urethra and Urinary Bladder in Septic Conditions Following Childbirth and Abortion. E. Quater and C. Paperno.—p. 266.
Interstitial Pregnancy: Microscopic Changes. L. Kalledey.—p. 272.
Cervical Pregnancy: Early Placenta Isthmicocervicalis. B. Kleiner.—p. 291.
*Cholesterol Metabolism in Artificial Abortion. A. A. Kogan, J. A. Lewenson and J. L. Libin.—p. 303.
*Sarcoma of Pelvis: Difficulties in Diagnosis. K. Haun.—p. 309.
*Blood Picture in Myoma. E. Szabó.—p. 314.
Malignant Myoma: Three Cases. H. Döring.—p. 317.
*Puerperal Fever: Three Forms of Reaction of Reticulo-Endothelial System. H. E. Scheyer.—p. 335.
Traumatic Cyst of Vagina. A. Stux.—p. 345.
Ventrifixation of Uterus: Indications and Advantages. Peitmann.—p. 351.

**Cholesterol Metabolism in Artificial Abortion.**—Kogan et al. made 280 determinations of the cholesterol content of the blood in sixty gravidas in whom artificial abortion was performed for economic reasons. They found that during the first months of pregnancy the cholesterol content of the blood was increased. As early as the fourth day following artificial abortion there was a marked drop in the cholesterol content of the blood, which returned to normal again on the fourteenth to the eighteenth day. The authors believe that the intense oscillations in the cholesterol content of the blood following artificial abortion are the expression of marked metabolic disturbances.

**Sarcoma of Pelvis: Difficulties in Diagnosis.**—Haun reports a case of sarcoma of the pelvis in a woman, aged 51. The symptom that brought the patient to the physician was pain in the region of the sciatic nerve. In addition she complained of alternate constipation and diarrhea. Vaginal examination revealed the presence of tumor-like masses in the pelvis. True benign tumors as fibroma, osteoma and chondroma were eliminated in the differential diagnosis because the masses were not hard or sharply delimited. An original suspicion of a malignant tumor of the pelvis was dismissed following roentgen examination and a thorough surgical examination. In view of the entire clinical picture, the poor general condition of the patient and a high fever curve, the author thought that an inflammatory process was present. He believed that the process was either a gravitation abscess originating in a tuberculous osteomyelitis or a retro-uterine abscess originating in an inflammatory tumor or a suppurative true tumor of one of the organs of the pelvis. A puncture of Douglas' pouch was performed and when the edges of the opening were spread apart a large amount of yellowish green, fetid, blood-stained pus containing necrotic shreds of tissue escaped. Microscopic examination revealed the presence of sarcoma cells. The condition was deemed inoperable and the patient was given a roentgen irradiation. Postmortem examination three weeks later revealed a sarcoma of the sacrum with extensive destruction of bone and extension into the left iliosacral joint and the adjacent part of the ilium. Despite the great size of the tumor there were no metastases.

**Blood Picture in Myoma.**—Szabó studied the blood picture in fifty women with myoma. He found that neither eosinophilia nor an accelerated sedimentation rate of the blood corpuscles is characteristic of myoma. Other changes in the blood picture that have been described may be explained by the hemorrhages that occur in two thirds of the patients with myoma.

**Puerperal Fever: Three Forms of Reaction of Reticulo-Endothelial System.**—In twenty women with puerperal fever Scheyer found the following three forms of reaction of the reticulo-endothelial system: an areactive form, a well reacting form and a form that originally reacted well but, because of exhaustion, no longer reacted. Patients with the areactive forms usually died from peritonitis or fulminant sepsis. In patients with the well reacting form thrombophlebitis developed, but in spite of the possibility of infection these patients did not develop peritonitis or if they did they overcame the infection.

## Münchener medizinische Wochenschrift, Munich

**76:** 2079-2120 (Dec. 13) 1929

*Relation Between Amaas and Smallpox: Significance of Smallpox Vaccination for Prevention of Both Diseases. E. Leschke.—p. 2079.
History of Anesthesia: Anesthetics in Past and in Modern Times. H. Schmidt.—p. 2086. C'td.
Investigations of Fatalities Resulting from Tribromethanol Anesthesia. E. Glaesmer.—p. 2089.
Use of Detoxicated Scopolamine as Base in Anesthesia. H. Zielke.—p. 2091.
*Allergen-Free Chambers in Treatment of Bronchial Asthma and Other Allergic Diseases. M. J. Gutmann and H. von Hössle.—p. 2092.
Partial Torsion of Omentum in Pregnancy: Case. K. Schwank.—p. 2095.
Experiences with Meinicke Clarification Reaction. F. Marquardt.—p. 2096.
New Therapy of Angina Pectoris. L. Haberlandt.—p. 2097.
Friedmann's Method and the Tuberculosis Problem. E. Szalai.—p. 2097.

**Relation Between Amaas and Smallpox: Significance of Smallpox Vaccination for Prevention of Both Diseases.**—Leschke points out that beside the severe form of smallpox there is also a milder form. It is identical with the disease that in some countries is termed alastrim or amaas. The author designates it as "mitigated" smallpox. Its clinical aspects differ somewhat from those of smallpox. The mortality is low, being about 1 per cent. The virus of amaas shows all the characteristics of the virus of smallpox. It appears to be a modification of the smallpox virus in which the virulence is somewhat weakened. The author asserts that smallpox vaccination protects against the severe as well as against the mitigated form. He describes the development of an amaas epidemic in the Netherlands. His report clearly shows that in order to prevent epidemics of amaas, the same severe measures are necessary as are legally prescribed for smallpox. The author also directs attention to the complications, such as encephalitis, that occasionally develop following smallpox vaccination. In order to reduce the danger of such complications he recommends that less virulent vaccines be used; further, that the first vaccination be performed as early as possible, and finally that the number of vaccination incisions be limited to one or two.

**Allergen-Free Chambers Used in Treatment of Bronchial Asthma and Other Allergic Diseases.**—Gutmann and von Hössle discuss the significance of house and climate allergens in the pathogenesis of the various allergic diseases. The detailed report of four cases shows the therapeutic value of allergen-free air, which is provided by specially constructed chambers. The mechanism of the apparatus as well as the method of treatment is described. The authors conclude that for many patients with bronchial asthma and with other allergic diseases, such as hay-fever, migraine, allergic eczema and chronic bronchitis, the allergen-free chamber is of great diagnostic and therapeutic value. It is convenient and practical.

## Strahlentherapie, Berlin

**34:** 443-664 (Dec. 4) 1929. Partial Index

Therapeutic Action of Viosterol: Present Status. A. F. Hess, J. M. Lewis and H. Rivkin.—p. 443.
Irradiation of Uterine Myomas and Hemorrhagic Metropathies: Results. E. von Ammon.—p. 457.
Dosage of Hard Roentgen Rays from a Distance in Treatment of Cancer of Cervix Uteri. W. Fürst.—p. 501.
*Cancer of Tongue. G. Schulte.—p. 541.

**Cancer of Tongue: Roentgen Treatment.**—Schulte reports a case of cancer of the tongue in which the patient was cured by means of roentgen irradiation. The patient, a man now aged 52, consulted Garrè in 1923 with a cancer involving the entire base of the tongue and extending to the pharynx and the glosso-epiglottic ligament and far anteriorly. Marked oral fetor was present. The regional lymph nodes were much enlarged, hard and painful. The patient could not swallow solid food and experienced great difficulty and pain on drinking even water. Garrè considered total extirpation of the tongue, but because a permanent cure could not be expected and because of the enlarged lymph nodes, he recommended intense roentgen treatment as a palliative measure. After four weeks of roentgen treatment the patient was completely free from disturbances of swallowing and could eat solid food. The fetor had disappeared. An ulcerated area of the cancer had become almost completely covered with epithelium. Five months later, however, the patient returned with a tumor the size of a small hen's egg, overlying and firmly adherent to the left sternoclavicular joint. On both sides of the neck along the sternocleidomastoid muscle there was a chain of lymph nodes ranging in size from a hazelnut to a pigeon's egg. The general condition of the patient was unsatisfactory. The tumor was removed surgically and both the site of the tumor and the enlarged cervical lymph nodes were subjected to intense roentgen irradia-

tion. Microscopic examination of the tumor revealed cancer. Nevertheless two months later the enlarged lymph nodes had disappeared and the patient's condition was greatly improved. During the past six years the patient has remained perfectly well and has been able to follow his former occupation. The movement of the tongue is almost normal, the speech is clear and the cervical lymph nodes are not enlarged.

## Wiener klinische Wochenschrift, Vienna

**42:** 1621-1652 (Dec. 19) 1929

Pathogenesis of Cancer Metastases. C. Sternberg.—p. 1621.
*Results of Radical Operation in Cancer of Uterus. H. Peham.—p. 1622.
Opsonization of Medicaments and of Vaccines, Especially of Gonococcus. G. D. Belonovski.—p. 1624.
Clinical Aspects of Intestinal Lymphogranulomatosis. R. Klima.—p. 1626.
Changes in Erythrocyte Picture Caused by Medication with Salicylic Acid Preparations. F. Kerti.—p. 1630.
Treatment in Injuries of Fingers. H. Steindl.—p. 1631.
So-Called Male Climacteric. O. Schwarz.—p. 1636.
Alcoholism and Mental Disturbances. H. Herschmann.—p. 1638.

**Results of Radical Operation in Cancer of Uterus.**—Peham discusses various forms of treatment of cancer of the uterus. He points out that before 1900 the usual operative treatment was extirpation of the uterus without removal of the surrounding tissues or of the regional lymph nodes. Later more radical surgical methods were adopted. The author investigated percentages of primary mortality and of relative and complete cure in relation to the various methods of treatment. The results of these investigations as well as his own experiences during twenty-five years led him to the conclusion that the removal of the regional lymph nodes is not the determining factor in the surgical treatment of cancer of the uterus. It was found that the vaginal operation gave the same final results as the abdominal operation with the removal of the lymph nodes. Moreover, the primary mortality is comparatively low if the vaginal method is employed. Instead of the abdominal method with removal of the lymph nodes, the author recommends the vaginal operation with subsequent irradiation. He advises radiation therapy also for inoperable cases. In conclusion he stresses that an early diagnosis of cancer of the uterus is of the greatest significance for a successful treatment.

## Zeitschrift für Krebsforschung, Berlin

**30:** 231-316 (Nov. 18) 1929

Tar Cancer in Brick Kilns: Prevention. Teutschlaender.—p. 231.
*Sedimentation Rate in Cancer of Uterus. P. Goldschmidt-Fürstner.—p. 241.
Neurinoma of Cerebellopontile Angle. L. I. Ssuchowa.—p. 251.
New Method for Determination of Oxygen Content of Human Blood by Means of Indophenol Blue. E. Sehrt.—p. 260.
Rôle of Chemical Compounds in Origin of Tumors. W. Vaubel.—p. 271.
Chromosome Studies on Cancer Cells in Vitro. R. Goldschmidt and A. Fischer.—p. 281.
Pleural Exudate in Persons with Cancer of Mamma. H. Auler and P. Meyer.—p. 286.
Biology of Bacillus Tumefaciens. F. Kauffmann.—p. 290.
Tumor Immunity in Relation to Vaccine Therapy. H. Auler.—p. 295.

**Sedimentation Rate in Cancer of Uterus: Prognostic Significance.**—Goldschmidt-Fürstner studied the curves of the sedimentation rate in 106 cases of cancer of the uterus. He found that a series of observations of the sedimentation rate in this condition is of definite prognostic value. In many cases of cancer of the uterus the changes in the sedimentation rate precede the changes in the clinical picture. In some of the cases the changes in the sedimentation rate and the changes in the clinical picture run parallel. When the two sets of changes do not run parallel, one should suspect the presence of an intercurrent inflammation.

## Zeitschrift für Tuberkulose, Leipzig

**55:** 97-192 (Nov.) 1929

Tuberculosis: Prevention and Treatment. G. Baer and B. Kattentidt.—p. 97.
Azygos Lobe of Lung: Roentgen Picture. M. Neumann.—p. 122.
Immunity of Rats to Tuberculosis: Mechanism. I. J. Goldenberg.—p. 125.
*Schlossberger Precipitation Reaction. H. Schulte-Tigges.—p. 133.
Prevention of Tuberculosis: English Milk Law. H. Haupt.—p. 136.
Pulmonary Tuberculosis: Surgical Treatment. R. Brinkmann.—p. 142.

**Schlossberger Precipitation Reaction in Diagnosis of Tuberculosis.**—Schulte-Tigges performed simultaneously the Schlossberger precipitation reaction, the Goldenberg complement fixation reaction, the original Besredka reaction and the erythrocyte sedimentation reaction in 300 cases of tuberculosis. He states that in pulmonary tuberculosis the complement fixation reaction more frequently agrees with clinical observations than does the precipitation reaction. The latter is frequently positive in mild forms of tuberculosis and frequently negative in severe forms. The author believes that the precipitation reaction is of less clinical value than either the complement fixation reaction or the erythrocyte sedimentation reaction.

## Hospitalstidende, Copenhagen

**72:** 1103-1144 (Nov. 21) 1929

*Effect of Intravenous Injections of Insulin. A. Nordsted, A. Norgaard and T. E. Hess Thaysen.—p. 1103.
*Experimental Tuberculosis in Rabbits: II. Experiments in Untreated Bovine Tuberculosis of Low Virulence. E. Jarløv and E. Rekling.—p. 1115.
*Id.: III. Experiments in Untreated Human Tuberculosis. E. Jarløv, N. Sjørslev and K. Winge.—p. 1120.
*Treatment of Lupus Erythematosus with Intravenous Injections of Gold Chloride. H. Haxthausen.—p. 1125.
Lundgren's Oblique Centrifuge and Determination of Volume of Cells. H. C. Gram.—p. 1141.

**Clinical Investigations on Effect of Intravenous Injections of Insulin.**—Of the so-called hypoglycemic symptoms due to insulin, Nordsted et al. emphasize the rise in the systolic blood pressure and the fall in the diastolic, together with increase in the pulse rate. The maximal changes in blood pressure and pulse rate occur near the time when the hypoglycemia ends. The changes in blood pressure and pulse are regarded as the result of a regulatory mechanism that terminates the hypoglycemia and causes the blood sugar concentration to rise. An essential, presumably the most important, factor in this regulatory mechanism is an increased activity of the suprarenals; the participation of other endocrine glands also is possible. The term "insulism" is suggested as perhaps preferable to "hypoglycemic" symptoms.

**Investigations in Experimental Tuberculosis in Rabbits: II. Experiments in Untreated Bovine Tuberculosis of Low Virulence.**—Jarøv and Rekling obtained positive results in all cases. The condition seemed to begin as an acute miliary process, accompanied by more or less extensive inflammatory processes in the tissue, followed by partial resorption, and the disease passed into a chronic stage leading to limitation and organization of the processes, i. e., a more or less extensive spontaneous recovery.

**Investigations in Experimental Tuberculosis: III. Experiments in Untreated Human Tuberculosis.**—Jarløv et al. see in their recent results more clearly than in their earlier results the course of experimental tuberculosis. The intravenous administration in rabbits of 0.01 mg. or more of human or bovine tubercle bacilli produces an acute miliary tuberculosis of miliary character in the lungs and kidneys in all cases. In animals surviving the culmination of the disease the acute processes are replaced by localized foci that clearly show a tendency to healing but nevertheless in some cases constitute the starting point for chronic destructive processes in the organs or bones. They conclude that probably all strains of bacilli injected into rabbits by their method cause similar effects, which differ only in degree, according to the virulence of the strains.

**Treatment of Lupus Erythematosus with Intravenous Injections of Gold Chloride.**—Haxthausen treated 109 patients. Intravenous injections of gold chloride were given once a week, the initial dose of 1 mg. being increased only if after several injections no results followed, in which case 5 mg. was injected, this being increased if ineffective to 10 mg. From the large proportion of patients apparently cured or definitely improved by this treatment, he concludes that the method seems to give results as good as those obtained by the use of the gold compounds in common use. The combined treatment with gold chloride and Finsen irradiation surpassed in results purely local or internal treatment. Gold chloride seems to have few harmful effects and none of grave nature, and is far cheaper than other gold compounds. The concentration of gold used, 1:1,000, is strongly bactericidal and sterilization of the solution is unnecessary.